

IN THE UNITED STATES BANKRUPTCY COURT
FOR THE DISTRICT OF DELAWARE

In re:)	Chapter 11
)	
W. R. GRACE & CO., <i>et al.</i>)	Case No. 01-01139 (JKF)
)	(Jointly Administered)
Debtors.)	

**DECEMBER 21, 2006 REPORT OF ROGER G. MORSE AIA ON SUMMARY
OF INFORMATION AVAILABLE TO CANADIAN BUILDING OWNERS
AND MANAGERS ABOUT ASBESTOS IN BUILDINGS, 1970-1995**

**Report
of
Roger G. Morse AIA**

On

**Summary of Information
Available to Canadian
Building Owners and Managers
About Asbestos in Buildings,
1970-1995**

December 21, 2006



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Information Available to Canadian Building Owners About Asbestos, 1970-1995

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**Summary of Information Available to
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**EXECUTIVE SUMMARY OF INFORMATION AVAILABLE TO
CANADIAN BUILDING OWNERS AND MANAGERS ABOUT
ASBESTOS IN BUILDINGS**

Consistent with my experience, research shows that, starting in the early 1970s and continuing through to the mid-1990s, a vast and overwhelming amount of information about asbestos in general and about the widespread use of asbestos-containing materials (including surfacing materials such as fireproofing) and the controversy concerning potential alleged health hazards of such materials in buildings specifically was available to Canadian building owners from a wide variety of sources. Canadian newspapers, which were available either to the entire Canadian population regardless of occupation or location or to the population of a particular Canadian province, provided a steady flow of news articles about the issues concerning the use of asbestos-containing in buildings between 1975 and 1995. In addition, beginning in the late 1980s, there was a significant amount of information in the literature concerning the development of asbestos-in-buildings litigation in Canada. All of this information would have served to increase awareness about asbestos in buildings for people interested in or associated with the operation of buildings in Canada.

There was a large amount of information relating to asbestos in major cities in each Province, as well as information available on both a national level and an international level. The provincial information includes Province-specific regulations and local and regional newspapers. The national information includes extensive information identified or generated as a result of the Royal Commission on Asbestos as well as publications by the popular press, including newspapers, business magazines, general magazines, and books that were distributed throughout North America. Trade unions and worker organizations were also aware of asbestos on both a provincial and national level.

Information about asbestos-related activities in the US was available to Canadian building owners and managers through a number of sources. Canadian newspapers throughout Canada, internationally circulated US newspapers such as the *New York Times*, *Wall Street Journal*, and *Washington Post*, and other American newspapers from cities near the US/Canadian border such as Portland, OR and Seattle, WA, contained articles about the US experiences with asbestos. These publications reported on such salient events as research on asbestos exposures conducted by Dr. Irving Selikoff and Mt. Sinai Hospital; the ban on the use of sprayed fireproofing in New York City, Philadelphia, and Chicago; AHERA regulations affecting the nation's schools and concern over the potential expansion of these rules to include commercial buildings; and, the

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USEPA ban on asbestos-containing products. International trade associations exchanged information through newsletters. Canadian and US labor unions corresponded with their international affiliates. Worldwide and North American conferences were held and publicized in the US and Canada at various times.

For purposes of identifying the availability of information to the Canadian building owner about asbestos in buildings, suffice it to say that a vast amount of information was in the public domain in the 1970s, even prior to The Royal Commission on Asbestos. In 1980-1984, the Royal Commission generated an even greater awareness, not only of asbestos, but also of the availability of information about asbestos in general and asbestos in buildings in particular.

QUALIFICATIONS

Roger G. Morse AIA Qualifications

I am an architect licensed to practice architecture in a number of states and also an environmental consultant with many years of experience. I began to provide consulting services regarding asbestos in buildings in 1979-80 and continue to provide such services. A true and correct copy of my curriculum vitae is attached hereto and incorporated herein by reference.

I received my Bachelor of Science degree from Rensselaer Polytechnic Institute in 1970, and my Bachelor of Architecture in 1971 from the same institution.

I earned a license to practice architecture in 1976 after graduating from an accredited school of architecture, working under the direction of a licensed architect for at least three years and passing two batteries of tests, one lasting 5 days and one lasting 2 days. I am licensed to practice architecture in ten states and the District of Columbia. I hold certification by the National Council of Architectural Registration Boards, which allows for reciprocal licensing in many other states.

I am the President and Technical Director of Morse Zehnter Associates, a firm that provides consulting services in the fields of architecture, indoor air quality (IAQ), forensic investigations, HVAC Engineering and environmental issues in buildings, including specific services relative to asbestos, toxic materials, indoor air, industrial hygiene, environmental management, remediation, sampling and analysis of air and materials. Morse Zehnter Associates has offices located in the Rensselaer Technology Park at 165 Jordan Road, Troy, New York, 12180 and 2240 Palm Beach Lakes Boulevard, West Palm Beach, FL 33409.

I have been involved as an architect and environmental consultant in the specialized area of asbestos evaluation and control since the late 1970's. I received specialized training in asbestos at the Page and William Black Post-Graduate School of Medicine of the Mount Sinai School of Medicine and the

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National Asbestos Training Centers at University of Kansas and Georgia Institute of Technology and hold accreditations in asbestos inspection, management planning and abatement design. Because of my expertise with respect to asbestos in buildings, I have served on a number of professional committees and panels concerned with asbestos issues. I have given presentations on environmental issues in the building industry to the American Institute of Architects, the American Society of Heating, Refrigerating and Air Conditioning Engineers, American Industrial Hygiene Association, International Facilities Managers Association, Building Owners and Managers Association, Environmental Information Association and many other organizations. I have developed courses on environmental issues in buildings and taught asbestos-related professional accreditation courses at a number of universities including Georgia Tech, the University of Kansas, the University of Illinois, Tufts University and the Environmental Institute.

Prior to my work at Morse Zehnter Associates I founded an environmental consulting firm in 1985. This firm was formed as a general business corporation because my architectural firm would lose its professional liability insurance if it continued to provide asbestos consulting services. During this period of time I assisted EBASCO to underwrite liability insurance policies for asbestos abatement contractors. So I have first hand knowledge of the impact of asbestos concern on the insurance industry.

When I first started providing asbestos services as a sole practitioner in 1982 I was easily able to provide the necessary services without assistance. In 1983 the demand for services began to increase rapidly until in 1988-89 my firm had grown to about 75 employees with branch offices in four cities. I have experienced first hand the growth of the asbestos control industry. I associated with my peers at conferences and professional meetings during this time. My peers were experiencing a similar growth in the demand for services.

I have conducted numerous meetings in buildings where occupants were frightened due to asbestos-containing materials in the building. I have conducted informational meetings for large and frightened groups of parents whose children were attending schools that had asbestos-containing materials.

I have surveyed hundreds of buildings for asbestos-containing materials and designed and monitored asbestos abatement projects in hundreds of buildings.

I have served on the EPA's Science Advisory Board, the U.S. Department of Housing and Urban Development's Healthy Homes Initiative peer review panel, and several other EPA peer review committees, including panels on hazard assessment and operations and maintenance of buildings with asbestos-containing materials.

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I was appointed as the representative of the architectural community to the committee that developed the AHERA regulation through the process of regulatory negotiation (RegNeg). As such, I am intimately familiar with the regulation and the circumstances of its development.

I was appointed to the Select Committee convened by the Environmental Protection Agency and National Bureau of Standards to develop the Transmission Electron Microscopy clearance protocol for the AHERA regulation. As such, I am intimately familiar with this method and the issues and circumstances surrounding its development.

I am a member of the American Society for Testing and Materials D22.07 Committee on Sampling and Analysis of Atmospheres, and I am currently the committee member responsible for preparing a draft of a guidance document covering the proper use of the data from the ASTM dust sampling methods.

I am the principal author of the National Institute of Building Sciences' "Asbestos Abatement and Management in Buildings, Model Guide Specification." During work on this document I developed work practices for removal of asbestos-containing fireproofing and acoustical plaster.

In the early 1990's, I served on the Literature Review Panel, a multidisciplinary group of internationally-recognized experts brought together by the EPA under the auspices of the Health Effects Institute – Asbestos Research ("HEI-AR"), Cambridge, Massachusetts, whose work resulted in the publication of "Asbestos in Public and Commercial Buildings: A Literature Review and Synthesis of Current Knowledge."

I have published articles and guidance documents on asbestos in buildings including the topic of maintaining asbestos in place as a response action. A list of my publications is included in my Vitae.

I am familiar with the published scientific and scholarly work concerning asbestos in place, the management thereof, the health effects thereof and related issues. I regularly keep abreast of developments in the field by annually attending and speaking at scientific meetings, which occur throughout the United States.

I have had and continue to have a research interest in the asbestos and non asbestos containing materials used in buildings, the inter-relationships between these materials and building systems, the effect that normal use and occupation of buildings has on these materials and relationships, and the effect that this use, or abuse, will have on the potential for human exposure to asbestos.

This report is based on my experience as an asbestos consultant, knowledge of the facts and on information available to me as of the date of this report. If

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additional relevant information becomes available I may amend or supplement my opinions appropriately.

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INTRODUCTION

In Canada, building owners had available to them a vast amount of information about the issues concerning the use of asbestos-containing materials in buildings to the extent that, by the early to mid-1980s, virtually all building owners should have been aware of the widespread use of asbestos-containing materials and the alleged potential risks of those materials in their facilities. That information came from public agencies, from the popular press (both Canadian and American) and from trade journals. Perhaps more importantly, building owners, and the public in general, were aware of the activities of the Royal Commission on Asbestos during 1980-1984. In addition, building owners were obligated by an increasing number of Federal and Provincial regulations to know about the asbestos-containing materials in their buildings. Also beginning in the late 1980s, there was an increased discussion in the relevant literature concerning the active asbestos-in-buildings litigation in Canada, including discussions concerning the issues of building owners bringing such actions in a timely manner. The flood of information and regulations continued throughout the 1980s and into the early to mid-1990s.

Asbestos mining and processing were significant industries throughout Canada, especially in the Provinces of Alberta, British Columbia, and Ontario. With many of the world's asbestos mines located in Canada, the general population of Canada was aware of asbestos and related health issues. Early issues related to the exposure of asbestos workers in fixed place operations (workers in mining operations, processing operations, and manufacturing) rather than to asbestos in buildings.

The history of public awareness of asbestos began with a study conducted among shipyard workers. A researcher at Mt. Sinai, Dr. Irving Selikoff, discovered in 1964 that these workers, who experienced heavy occupational exposures to asbestos, died from cancer in numbers he found alarming. This initial study led to further studies in the 1970s, which were in the public domain and as such were available to Canadians such as building owners with a particular interest in protecting workers from asbestos exposures.

Based on concern about asbestos exposure to workers and the awareness of research such as the reports by Selikoff in the 1960s and 1970s, concern grew about the effects of asbestos exposure to workers in and around buildings.

By the 1970s, the researchers at Mt. Sinai and the newly formed United States Environmental Protection Agency (USEPA) publicized their views that asbestos exposures could occur due to asbestos-containing materials in buildings and could lead to disease. At the same time, there were many reports in the press about cancer being linked to asbestos. A widely discussed series of articles was published in *The New Yorker Magazine* about asbestos disease in workers. As a

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result of this publicity, the public began to develop a general concern about asbestos in buildings. In 1973, the USEPA promulgated regulations prohibiting installation of spray applied asbestos-containing fireproofing and requiring that, under certain circumstances of disturbance of in-place materials, controls be undertaken. Canadians followed the U.S. experience with interest, through various avenues, including the popular press and affiliated professional and trade organizations.

During the mid to late 1970s the USEPA extended its ban on asbestos-containing materials to pipe and boiler insulation and decorative treatments. The Consumer Product Safety Commission also banned asbestos in several consumer products in the late 1970s. The ban on consumer products was a concern for Canadian manufacturers and received substantial press coverage in Canada.

The Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario was established in 1980, and, through widely-publicized public hearings, the Commission (RCA) conducted a high-profile analysis of issues relating to asbestos exposure in Canada, including Canadian buildings, culminating in 1984 with the Royal Commission on Asbestos report. Having considered a vast amount of literature about asbestos exposure available up to that time, the Commission effectively highlighted the availability of this information to the public.

At about this time, many reports written regarding the connection between asbestos exposure and cancer, including a series of articles in 1983 about the bankruptcy of the Johns Manville Company¹, increased the public anxiety about asbestos in buildings.

Johns Manville Company of Canada became involved in a lawsuit in the 1980s with its insurance carrier. In that case, called *Canadian Indemnity Co. v. Canadian Johns-Manville Co.*, the Courts, both in the initial decision in 1988 and on appeal in 1990, found that there was substantial literature and other information about asbestos available to the Canadian public in the 1970s to provide an awareness of the issues in the asbestos controversy. The Court cited three reports by Dr. Selikoff and found that these reports, along with a wealth of Canadian newspaper coverage about asbestos in Canada and awareness of the events in the United States, were available to the Canadian public throughout the 1970s and 1980s.

Also in the late 1980s, asbestos-in-buildings litigation began in earnest in Canada. The first of many asbestos-in-buildings actions brought by owners of buildings with in-place asbestos-containing materials was *Privest Properties Ltd. et al v. The Foundation Company of Canada Limited, et al.* This litigation

¹ Brodeur, Paul. (1985). *Outrageous Misconduct, The Asbestos Industry on Trial*. Pantheon Books.

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commenced in 1987 with the claimant building owners naming the manufacturer (Grace) of the asbestos-containing product of concern (fireproofing) and all of the contractors, subcontractors and design professionals involved with the installation of the asbestos-containing fireproofing. Beginning with the *Privest* litigation in the late 1980s and through the mid-1990's there was prominent coverage given to the asbestos-in-buildings litigation in Canada.

Concern about asbestos in schools and possible exposure to asbestos by children was a significant concern in Canada. In 1979, the Ontario Ministry of Education initiated a program to inspect its schools for asbestos-containing material. School boards were asked to take corrective action to eliminate any friable asbestos hazards discovered as a result of the inspections. This inspection program continued for several years.² In the U.S., public pressure continued to build throughout the 1980s resulting in additional regulations and governmental guidance documents concerning asbestos in buildings. In 1986 the U.S. Congress mandated that the USEPA promulgate a rule - the AHERA regulation - to require school districts to inspect schools and then give a deadline for the filing of plans for dealing with the asbestos-containing materials in school buildings. The AHERA regulation virtually created a large and robust asbestos control industry. The National Asbestos Council, a trade organization for the asbestos control industry, grew from around 100 members in 1983 to more than 4,000 members by the end of the 1980s³. Public pressure continued and there were demands that EPA extend the requirements of the AHERA regulation to public and commercial buildings. Again, the debates over asbestos in schools were prevalent in Canada.

Concern about asbestos in government buildings was a significant issue on the provincial level as well as on the federal level in Canada. In the early 1980s, some government buildings in Ontario were inspected for asbestos-containing materials. The Ontario Ministry of Government Services initiated a program of "visual inspections, bulk sampling, and air sampling in response to specific enquiries or concerns." 68 building were inspected.⁴ As of 1983, some 3,700 of the 13,000 Federal government buildings across Canada, managed by Public Works Canada, were inspected for sprayed friable asbestos, according to the Royal Commission on Asbestos report.⁵

² Report of The Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario. 1984. Pages 597-598.

³ Scott W. (1991, Nov/Dec). Association News From the President. Environmental Choices National Asbestos Council.

⁴ Report of The Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario. 1984. Page 598.

⁵ Report of The Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario. 1984. Page 598.

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Thus, building owners and managers were informed by the Royal Commission on Asbestos and by various regulations, government agency guidance documents and the flood of public information about the issues concerning the use of asbestos-containing materials in their buildings.

Literature Available in Canada

There is a vast amount of governmental, business, and popular literature available on the inhalation risk of asbestos. This report focuses on summarizing the literature relating to asbestos in buildings that was available to Canadian building owners and managers from sources such as governmental agencies, trade journals, newspapers, and popular magazines during the years 1970-1995.

The opportunities that people had during the 1970s, 1980s, and early 1990s to become aware of asbestos in buildings were plentiful. In order to gauge the availability of information about asbestos in buildings over the years, a variety of information sources available to groups of people that might have had an interest or need to know about asbestos in buildings was identified.

Several types of documentation that were available to Canadian building owners and managers and people in business and industry that might be associated with or affected by buildings in Canada were identified. Recent books were referred to that describe the evolution of issues relating to asbestos and asbestos in buildings. Finally, Canadian newspapers in each Province were identified as representative publications that were available to the Canadian public. Several American newspapers were also identified as representative publications that were available to the Canadian public.

Research was placed into broad categories, as follows:

- Government Sources
- Information relating to Building Owners' Groups and Advisers
- Information relating to the Educational Community
- Information relating to Architecture, Engineering, and Construction
- Information from the Popular Press, including newspapers, business and general magazines, and books
- Information from other sources, including the Environmental Information Association and Labor Union contacts.

Within each of these general categories, journals/documents were found that were available to different groups in Canada during the 1970s, 1980s, and 1990s. Journal articles, reports, advertisements, announcements, and notices relating to asbestos were identified and reviewed. The search was narrowed to those articles relating to asbestos in buildings. Being readily available to building owners in Canada during this period, these published items would have served to increase the awareness of the issues concerning the use of asbestos-containing materials in buildings for people who were somehow associated with buildings.

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Major Canadian newspapers were identified in each Province as primary resources, along with major newspapers and magazines published in the United States. Online or microfilm searches were conducted of each newspaper's archives for the 1970-1995 time period. Newspaper articles relating to asbestos were identified. As with the journal research, the search was then narrowed to those articles relating to asbestos in buildings. These articles were then reviewed for specific references to events or milestones in the history of asbestos and the regulation of asbestos in buildings in Canada.

It is important to note that the literature search, although comprehensive and representative of the information available to Canadian building owners and managers and others associated with buildings during the 1970-1995 time period, is not complete. The amount of information available is vast, and as much information was reviewed and collected as possible in the limited allotted time. Recognizing the overwhelming amount of documentation, all available government regulatory documentation was not collected.

Copies of all of the documents reviewed are not contained in this report. Copies of documents are available upon request.

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AVAILABILITY OF INFORMATION

Information Available from Government Sources

Government Documents

Government Guidelines and Informational Literature

The Canadian Federal Government and Provincial Governments published literature relating to asbestos in buildings during the 1970-1995 period.

Examples of this type of widely disseminated literature included the following:

- B.C. Ministry of Labour/Occupational Environment Branch, The Control and Management of Friable Asbestos Materials: Guidelines for Identifying and Controlling the Hazards Associated with Friable Asbestos-Containing Building Materials (1983)
- B.C. Workers Compensation Board, Safe Handling of Asbestos: A Manual of Standard Practices, 5th printing (Richmond: WCB, 1990)
- Ontario Ministry of Labour, Designated Substances in the Workplace: A Guide to the Asbestos Regulation for Construction Projects, Buildings and Repair Operations (Toronto: 1987)
- Health and Welfare Canada/Consumer and Corporate Affairs Joint Press Release re Proposed Regulations on Asbestos (May 28, 1975)
- Air Resources Branch, Ontario Ministry of the Environment, Asbestos as a Hazardous Contaminant, Progress Report 11: Asbestos Ambient Air Monitoring Survey (Toronto: Ontario Ministry of the Environment, 1976)
- Ontario Ministry of Labour, Occupational Health and Safety Division, Inspecting Buildings for Asbestos (Toronto: Ontario Ministry of Labour, 1970)
- Alberta Building Standards Council, Alberta Building Code 1990, 2nd printing (1993) (Ottawa: National Research Council of Canada, 1990)

Provincial Government Regulations

Regulations relating to asbestos and other materials of concern were either in place or enacted by each Province, and often amended, during the 1970-1995 period. It was incumbent on building owners, as owners, managers, landlords, employers and contractors, to be aware of regulations that potentially imposed legal duties on them and affected the operation of their buildings. Regulations addressing issues related to asbestos in buildings would include, but not be limited to, the following topics:

- Dangerous Goods Handling and Transportation;
- Building Code requirements and standards;
- Workmen's Compensation;
- Environmental Protection;
- Occupational Health and Safety.

A list of provincial regulations issued between 1970 and 1995 pertaining to asbestos in buildings would be extensive. Examples of provincial regulations pertaining to asbestos in buildings, along with notice dates, include the following:

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- Alberta Occupational Health and Safety Act, ALTA. Reg. 393/88, published in the Alberta Gazette in 1989.
- British Columbia Reg. 64/72, published in 1972.
- British Columbia Reg. 585/77, published in 1977.
- British Columbia Reg. 374/79, published in 1979.
- British Columbia Reg. 267/93, published in 1993.
- Ontario Occupational Health and Safety Act, Reg. 529/88, "Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations," published in *The Ontario Gazette* in 1988.
- Ontario Workers' Compensation Act, Reg. 276/92, published in *The Ontario Gazette* in 1992.
- Nova Scotia Reg. 238/88, "Asbestos Waste Regulations," published in the *Royal Gazette* in 1988.
- Newfoundland Reg. 194/91, "Asbestos Abatement Code of Practice under The Occupational Health and Safety Act," published in *The Newfoundland Gazette* on October 4, 1991.

Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario

Prior to The Royal Commission on Asbestos, a vast amount of information was in the public domain in the 1970s. The Commission, however, fostered a greater awareness, not only of asbestos, but also of the availability of information about asbestos in general and asbestos in buildings in particular. This documentation includes hundreds of documents that were available to the public throughout Canada.

The Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario (RCA) was formed in 1980 and completed its deliberations in 1984, resulting in a final report, along with a series of ten published documents (the RCA "Study Series") relating to various asbestos issues. The publications released by the RCA included hundreds of documents, all of which were available throughout Canada in the early 1980s or earlier⁶.

The establishment of the RCA was widely publicized throughout Canada. The RCA held a series of public hearings in 1980 to announce the Commission. The RCA accepted written and oral testimony from a large number of interested parties, including scientists, civil servants, unions, individuals, interest groups from Canada, the US, UK, and other world countries.

As described in Chapter 1 of the RCA report:

"Necessary or otherwise, this Commission had no shortage of attention. An initial public meeting, convened in October of 1980, attracted about 400 individuals, and this attendance was almost matched at a second public meeting six weeks later. These meetings had been announced in

⁶ Refer to Report of The Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario. 1984. Appendix F: Publications and Other Materials Released by the Royal Commission on Asbestos, pages 869-870.

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advertisements placed in 81 daily and weekly newspapers throughout Ontario. The advertisements also publicized the existence of a brochure which was available on request and which described our plan of activities. This brochure, which was also mailed on an unsolicited basis to persons likely to have an interest in our terms of reference, included a return postcard on which the recipient could indicate the desire to be placed on the Commission's mailing list or declare the intention to make a written or oral submission. Over 2,000 individuals and organizations placed themselves on our mailing list and were thereby kept abreast of all hearing dates and of our research programme."⁷

The RCA report was a three-volume document that was available to the public upon request.⁸

The RCA drew from a vast amount of documented experience in the preparation of its report, as evidenced by the references in the report. Part IV of the report dealt specifically with "Asbestos in Buildings." Chapters 9 and 10 of the RCA report provided a detailed discussion of issues involving asbestos in buildings and cited literature that was available to building owners prior to 1984. These documents [references cited in Chapters 9 and 10 of the RCA report, all dated between 1972 and 1983, were in the public domain and as such were available to Canadian building owners earlier than 1984.⁹

The RCA report included an appendix containing a "Selected Bibliography" offered by the Commission.¹⁰ The "Books Frequently Cited" section contains citations for seven books, and the "Books, Reports, Papers, and Articles" section includes over 400 references, including numerous reports written in the 1960s and 1970s that had been available to the public. It is clear that information was available prior to 1984 (in the 1970s) and that, as of 1984, information was not only available to building owners but was also identified for them.

The RCA report, issued in 1984, included 117 recommendations for the Ontario government to consider, including ten on Asbestos in Buildings [Chapter 9] and 25 on Asbestos Work in Buildings [Chapter 10]. Many of these recommendations specifically charged the building owner with certain responsibilities, such as reporting asbestos-containing material when it was found in a building; notifying tenants/building occupants about the presence of asbestos-containing material when it was found; providing training to workers

⁷ Excerpt from Chapter 1, page 4, of the Report of The Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario. 1984. Published by the Ontario Ministry of the Attorney General.

⁸ Copies of the Report of The Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario are available from Ontario Ministry of Government Services, Toronto, Ontario, Canada.

⁹ Chapters 9 and 10 of Report of The Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario. 1984. Chapters 9 and 10, pages 547-635.

¹⁰ Report of The Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario. 1984. Selected Bibliography, pages 879-919.

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who would come in contact or be exposed to asbestos-containing material; and removing all asbestos-containing material prior to demolition.

It was clearly incumbent on building owners and their legal advisers in 1984 to be aware of these responsibilities, even though the RCA recommendations were not yet enacted into law by the government, since there would be specific responsibilities placed on the building owner¹¹. Examples of RCA recommendations citing specific responsibilities of building owners include the following¹²:

- 10.2 (i) "Before the demolition or renovation of any building the characteristics of which raise the possibility that it might contain friable asbestos, the building owner must cause the building or relevant part of the building to be inspected to determine whether friable asbestos-containing materials are present."
- 10.3 "...where a building is required by law to be inspected or tested for asbestos, the building owner must cause the results of the inspection or testing to be recorded...in a public place..."
- 10.6 "...once friable asbestos-containing material is found in a building, the building owner must institute a programme of management and custodial control..."
- 10.11 "...the owner of a building or structure [must] ensure that prior to the demolition or partial demolition of a building or structure, all friable asbestos-containing materials which might be disturbed are removed from the building or structure..."

The RCA report was widely disseminated. In addition to their report, the Commission published a set of "Background Briefing Notes" in 1984 to inform the public about the report. This was another occasion for building owners to become aware of the report. Building owners' responsibilities were stressed in the Background Briefing Notes to the Ontario Royal Commission on Asbestos. According to Briefing Note #4, which addressed asbestos in buildings, "The Commission recommendations impose substantial new duties upon the owners of buildings to which asbestos was applied at the time of construction or renovation. This means buildings erected or renovated between 1960 and 1973. If friable insulation in such buildings is to be disturbed, the owner must have the material tested to determine whether it contains asbestos. If friable asbestos is found in a building, the owner must have it labelled, and must establish a management programme that will protect workers and occupants. This programme must include training all building custodial and maintenance workers in safe procedures for working with the asbestos, and for minimizing its disturbance. When maintenance, renovation or demolition work will be performed, the owner must notify the contractor and workers of the location of all friable asbestos in the building, and require that safe work procedures be followed. If asbestos is discovered in the course of some building work, the

¹¹ Recommendations 10.2, 10.3, 10.6, and 10.11 are examples of specific responsibilities for the building owner.

¹² Report of The Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario. 1984. [Excerpts from] Text of Formal Recommendations, pages 52-55.

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building owner is responsible for bearing the extra costs of dealing safely with that asbestos."¹³

It was also incumbent on architects, construction managers, asbestos removal contractors and consultants, demolition contractors, and hazardous waste site managers to be aware of the RCA deliberations. Interestingly, the conclusions reached by the RCA did not fully agree with legislation enacted or being considered in the US, and the conclusions discounted the danger of asbestos in buildings except in certain situations; nevertheless, the report raised the level of awareness about these issues to the public in general and clearly to building owners and their representatives in particular.

The Workers' Compensation Board (WCB)

The Workers' Compensation Board (WCB) had played a significant role in dealing with claims by people exposed to asbestos in fixed place operations; i.e., in mining and processing and manufacturing operations. The WCB's activities relating to asbestos in buildings was addressed by the RCA in 1984, since construction, demolition, and asbestos removal workers, and building maintenance and janitorial personnel were employees of or contractors hired by the building owner.¹⁴

The Canadian Ministry of Labour published a regular newspaper/newsletter called *The Labour Gazette*. As a publication of a federal agency, this paper would have been available to the public throughout Canada. An example of this publication relating to asbestos is an article published in 1975 that discusses the dangers of asbestos. The article also mentions Dr. Irving Selikoff:

- *The Labour Gazette*. (1975, June). Asbestos - The Hidden Time Bomb.

Workers' Compensation Boards regularly published informational documents. In the 1980s and 1990s, for example, the British Columbia Workers' Compensation Board (WCB) published a guide entitled, "Safe Handling of Asbestos: A Manual of Standard Practices."

The British Columbia Workers' Compensation Board (WCB) also published a periodical newsletter/magazine called *WCB News*. Following is an example of articles from *WCB News* that provided information to interested readers about asbestos in buildings.

- A 1988 article identified employers whose operations had been fined for violations of Industrial Health & Safety regulations and identifies the fines that were levied against those employers. Some of the employers noted in this particular example are owner/operators of public buildings such as hospitals, and some of the infractions relate to unsafe asbestos handling or removal operations. This article points out the existence of asbestos in buildings,

¹³ Background Briefing Note #4 to the Ontario Royal Commission on Asbestos. (1984).

¹⁴ Report of The Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario, Part VI: Compensating Victims: Asbestos and Its Implications, Chapters 12, 13, and 14. 1984.

Information Available to Canadian Building Owners About Asbestos, 1970-1995

the need to work with it safely, the need to adhere to prevailing regulations, and the levying of penalties against employers who violate health and safety regulations.

- (1988, January/February). Penalty Action for Non-Compliance with WCB Industrial Health & Safety Regulations. WCB News.

Information Available from Building Owners' Groups and Building Owners' Advisers

Building Owner Associations

BOMA International, BOMA Canada, BOMI

BOMA International, the Building Owners and Managers Association, has been well established in Canada for many years. BOMA International is headquartered in Washington, DC, USA. BOMA Canada, the Canadian arm of the organization, has provincial offices in most of the Provinces. Members of BOMA Canada would have had access to information relating to asbestos from two sources: the local affiliates relating information about local issues and BOMA International relating information about BOMA legislative issues in the US relating to asbestos.

Some, if not all, BOMA Provincial offices maintain a library of information available to its members. The BOMA Calgary library lists a copy of the following document:

- USEPA. (1985). Guidelines for Controlling Asbestos-Containing Materials in Buildings.

IFMA

The International Facility Management Association was established in 1980 and has Canadian affiliates (chapters) throughout the Canadian provinces. As with BOMA, members of IFMA-Canada would have had access to information relating to asbestos from two sources; the local affiliates relating information about local issues and IFMA relating information about US issues relating to asbestos.

Building-related Journals

We reviewed the following building-related publications for the 1970-1995 period, all of which were available to Canadian builders or building owners:

- *Buildings Magazine*
- *Canadian Building*
- *Canadian Building News*
- *Thompson's Insurance News*
- *ECOBulletin*.

Articles addressed topics such as the following:

- asbestos in buildings
- the use of sprayed fireproofing in buildings

Information Available to Canadian Building Owners About Asbestos, 1970-1995

- the ban on the use of sprayed fireproofing in New York City and Philadelphia in the U.S.
- Canadian lawsuits involving asbestos in commercial buildings
- air pollution
- ASTM standards
- air quality enforcement.

These publications contained advertisements about products (both ACM and asbestos-free) and articles of interest to building owners, facility managers, and insurance advisers.

Examples of articles include the following:

- (1970, February). Management and the Four Pollutions: Air, Water, Waste, Noise: An In Depth Study by Buildings' Staff. *Buildings*.
- (1973, August). Pollution free fireproofing material. *Buildings*.
- (1970, September). Toronto's first two-level mall opens on time in spite of labour disputes. *Canadian Building*.
- (1995, July 3). Landmark Asbestos Ruling Expected Soon. *Thompson's Insurance News*, 5.
- (1995). Case Law: Asbestos in Buildings. *ECOBulletin*, 9.

Canadian Law and Insurance Law Journals

Building owners would retain or have on staff attorneys who would provide legal advice. These attorneys would keep current on issues affecting the building owner. It is reasonable that information published in law journals and records of legal decisions would be a source of information to the competent attorney who would in turn provide advice or warnings to the building owner about issues of concern, such as "asbestos in buildings" issues. The same would be true in the case of insurance or liability issues, such as "asbestos in buildings" issues.

The legal decisions in *Canadian Indemnity Co. v. Canadian Johns-Manville Co.*, in 1988 and on appeal in 1989-1990, provided information about the availability of information about asbestos that would have been available to the building owner through his legal advisor. The reader reviewing this case in 1988 or 1990 would have taken note of the judges' descriptions of the vast amount of information about asbestos that was available to a reasonable and competent person.

Information Available from the Educational Community

Asbestos Concerns in Schools

Asbestos in schools was an issue in Canada, so much so that several schools were closed when asbestos was identified in the school buildings. Concern by parents about asbestos exposure by children became a significant issue. The U.S. experience with the USEPA and the AHERA regulation was followed closely in Canada.

Information Available to Canadian Building Owners About Asbestos, 1970-1995

Examples of articles include the following:

- U.S., Environmental Protection Agency, Support Document for Proposed Rule on Friable Asbestos-Containing Materials in School Buildings: Health Effects and Magnitude of Exposure, EPA 560/ 12-80-003 (Washington, D.C.: U.S. Environmental Protection Agency, October 1980).
- Julian Peto, "An Alternative Approach for the risk Assessment of Asbestos in schools," report to the U.S. Environmental Protection Agency, 6 April 1981. (Mimeographed.)
- U.S., Environmental Protection Agency, "Asbestos; Friable Asbestos-Containing Materials in Schools; Identification and Notification," Federal Register, vol. 47, no. 103, 27 May 1982.
- Advisory Task Force on Asbestos in Schools, Report (A Practical Document) (Toronto: Metropolitan Toronto School Board, May 1980), Appendix A.
- Letter from Mr. Stanley Orlowski, Associate Chief Architect, Grants Policy Branch, Ontario Ministry of Education to the Royal Commission on Asbestos, 23 February 1983.

Asbestos Awareness by Universities

The Royal Commission on Asbestos engaged the consulting services of experts from 10 universities. As a result of these engagements and the publicity of the RCA hearings, information about asbestos in general, and asbestos in buildings in particular, would have been readily available to others at these universities in the early 1980s.¹⁵

Information Available through Architect & Specifier Contacts

Architect and Specifier Contacts

We reviewed the following architectural publications, all of which were available to Canadian architects and the architectural community¹⁶:

- *AIA (American Institute of Architects) Journal*
- *The Architect*
- *Architectural Forum*
- *Forum*
- *Architectural Record*
- *The Canadian Architect*
- *Progressive Architecture*
- *RIBA Journal*
- *The Construction Specifier*

These publications contained advertisements about products (both asbestos-containing and asbestos-free) and articles of interest to the architectural community.

Articles addressed topics such as the following:

¹⁵ Refer to Report of The Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario. 1984. Excerpts from Appendix H: Consultants Engaged by the Royal Commission on Asbestos, pages 739-874.

¹⁶ All of these publications were found in the Vancouver, BC Public Library.

Information Available to Canadian Building Owners About Asbestos, 1970-1995

- the use of sprayed fireproofing in buildings
- the ban on the use of sprayed fireproofing in New York City and Philadelphia in the U.S.
- professional liability of architects, engineers, and specifiers under OSHA
- architectural-engineering specification study on building insulation.

It is clear that information about asbestos in buildings was available to building owners via the architectural community during the 1970-1995 period.

Examples of articles include the following:

- (1973, July). The Occupational Safety and Health Act, Its Relationship to Building Codes and the Design Professions. Construction Specifier.
- (1988, January). Yesterday's technology: Today's Lawsuit. *Canadian Architect*, 22(35).
- (1988, May). Building Pollution: Designers Beware. *Canadian Architect*, 59(63).
- (1989, July). Asbestos: A Ghost from Times Past. *Canadian Architect*, 47(56).

Information Available through Engineering & Construction Contacts

Engineering Contacts

We reviewed the following engineering/consulting engineering publications, all of which were available to Canadian engineers and the engineering community¹⁷:

- *The B.C. Professional Engineer*
- *Canadian Consulting Engineer*
- *Engineering News-Record*

These publications contained advertisements about products (both ACM and asbestos-free) and articles of interest to the engineering community.

Articles addressed topics such as the following:

- the ban of sprayed fireproofing in New York City, Philadelphia, and Chicago in the U.S.
- human health effects of asbestos
- asbestos exposure to workers in building trades
- Selikoff
- World Trade Center, NYC, USA fireproofing
- control of spraying operations
- sprayed fireproofing and fires in high-rise buildings
- air pollution in building design
- USEPA and Clean Air Act of 1970
- USEPA ban on asbestos fireproofing
- asbestos workers and smoking

¹⁷ All of these publications were found in the Vancouver, BC Public Library.

Information Available to Canadian Building Owners About Asbestos, 1970-1995

- OSHA
- alternative fireproofing systems
- handling asbestos by Canadian workers.

It is clear that information about asbestos in buildings was available to building owners via the engineering community during the 1970-1995 period.

Examples of articles include the following:

- (1971, June 3). Second City Prohibits Use of Spray-applied Asbestos. *Engineering News-Record*.
- (1971, October 7). Pollution Control Standards Could Curtail Asbestos Use. *Engineering News-Record*.
- (1972, February 10). Federal Ban on Asbestos Spraying is Likely to Stand. *Engineering News-Record*.
- (1973, January 11). Asbestos: a Potential Danger to Occupants. *Engineering News-Record*.
- (1973, February 15). Cost of Compliance: Asbestos is Topic of First Seminar on OSHA Standards. *Engineering News-Record*.
- (1974, September 19). Asbestos Fallout: Building Faces \$200,000 job of Removing Asbestos Ceiling. *Engineering News Record*.
- (1975, March 6). Canadian Laborers Balk at Asbestos. *Engineering News Record*.

Construction and Building Trades Contacts

We reviewed the following construction/building trades publications, all of which were available to Canadian engineers and the engineering community¹⁸:

- *Heavy Construction News*
- *The Trowel* (the official journal of the British Columbia Wall and Ceiling Association)
- *Plastering Industries*
- *Walls & Ceilings* (formerly *Plastering Industries*)
- *ECON Environmental Contractor Magazine*

These publications contained advertisements about products (both ACM and asbestos-free) and articles of interest to the construction/building trades community.

Articles addressed topics such as the following:

- protecting buildings from pollution
- fires, fire underwriting, and sprayed asbestos
- the ban of sprayed fireproofing in New York City and Chicago in the U.S.
- labor disputes in Toronto
- sprayed fireproofing.
- spraying regulations in New York and California
- new asbestos regulations
- unions and Workers Compensation Board in British Columbia, Canada
- plasterers using asbestos-containing materials

¹⁸ All of these publications, except for ECON Environmental Contractor Magazine, were found in the Vancouver, BC Public Library.

Information Available to Canadian Building Owners About Asbestos, 1970-1995

- asbestos dust exposure in high-rise building
- dust control methods
- UK Asbestosis Research Council and Asbestos Research Council
- Selikoff
- Workers Compensation Board and asbestos exposure
- guidance in the use of fireproofing, fire retardant, and insulation materials
- plaster standards manual
- fireproofing specification and Underwriters Laboratory of Canada
- asbestos worker exposure studies
- alternative non-ACM products
- airborne asbestos may constitute a health hazard to the general public
- fireproofing symposium
- stricter OSHA standards for workers exposed to asbestos
- NESHAP
- fines for OSHA violations
- asbestos threat to children
- USEPA enforcement of NESHAP
- Canada Ministry of Labour Construction Safety Branch and dust testing.

It is clear that information about asbestos in buildings was available to building owners via the construction/building trades community during the 1970-1995 period.

Examples of articles include the following:

- (1971, August 9). Tougher asbestos rules sought in B.C. *Heavy Construction News*.
- (1971, May). On Pacific Centre: Plasterers Refute Asbestos Hazard by Continuing Spray Operation. *The Trowel*.
- (1970, April). Sprayed Asbestos Viewed with Growing Alarm. *Walls & Ceilings* (formerly *Plastering Industries*).
- (1970, November). Business, Industry, Labor: Asbestos General Hazard? *Walls & Ceilings* (formerly *Plastering Industries*).
- (1971, April). Notice of Fireproofing Symposium. *Walls & Ceilings* (formerly *Plastering Industries*).
- (1971, July). Chicago Bans Asbestos. *Walls & Ceilings* (formerly *Plastering Industries*).
- (1972, March). Asbestos Standards Strict. *Walls & Ceilings* (formerly *Plastering Industries*).
- (1972, May). Even Trace Amounts of Asbestos May be Outlawed. *Walls & Ceilings* (formerly *Plastering Industries*).
- (1972, October). Chicago Halts Asbestos. *Walls & Ceilings* (formerly *Plastering Industries*).
- (1973, May). Asbestos War Continues. *Walls & Ceilings* (formerly *Plastering Industries*).
- (1974, March). Asbestos Ban. *Walls & Ceilings* (formerly *Plastering Industries*).
- (1974, May). Asbestos Danger Cited. *Walls & Ceilings* (formerly *Plastering Industries*).
- (1974, August). OSHA Cites New Asbestos Dangers. *Walls & Ceilings* (formerly *Plastering Industries*).
- (1975, July). Codes & Specs Groups Studies Asbestos Mess. *Walls & Ceilings* (formerly *Plastering Industries*).
- (1975, July). Canada Looks at Drywall Cement Peril. *Walls & Ceilings* (formerly *Plastering Industries*).

Information Available to Canadian Building Owners About Asbestos, 1970-1995

Information Available from the Popular Press

Newspapers

We researched newspaper publications in provinces across Canada to locate articles available to the public (including building owners and managers) that would provide an awareness of asbestos during the 1965-1995 period. We found that hundreds of articles relating to asbestos on both the local and provincial levels as well as on the national and international levels (primarily U.S.) were available throughout the Canadian provinces during the 1960s, 1970s, 1980s, and 1990s.

Issues such as the following were covered by the Canadian Press throughout the 1970-1995 period:

- Mt. Sinai and Selikoff's studies on worker exposure to asbestos
- The Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario
- labor union activities relating to asbestos
- litigation involving asbestos manufacturers such as Johns-Manville
- lawsuits involving building owners
- the ban on sprayed fireproofing in New York City and other cities
- USEPA activities relating to asbestos
- asbestos in schools.

The newspapers we researched include the following:

- National: The *Globe and Mail* started as a Toronto regional paper in 1844 and opened bureaus and offered subscriptions across Canada in the 1850s. Keeping its banner "Canada's National Newspaper," the newspaper expanded over the years through a series of mergers. Since the 1980s, the *Globe and Mail* has been printed in separate editions across Canada in the following cities: Halifax, Montreal, Toronto, Winnipeg, Calgary and Vancouver.¹⁹ It is reasonable that this newspaper was available in most provinces, including Alberta (Calgary and Edmonton), Ontario (Toronto), British Columbia (Vancouver), Manitoba (Winnipeg), Quebec (Montreal), and Nova Scotia (Halifax) since the early 1980s and in many provinces in the 1970s and 1980s.
- Alberta: *Calgary Herald*, *Edmonton Journal*, and *The Globe and Mail*.
- Ontario: *Toronto Star*, *Toronto Sun*, *Ottawa Citizen*, *Hamilton Speculator*, and *The Globe and Mail*.
- British Columbia: *Vancouver Sun*, *Vancouver Province*, *Vancouver Times*, *Victoria [Daily] Colonist*, *The Columbian*, and *The Globe and Mail*.
- Manitoba: *Winnipeg Free Press* and *The Globe and Mail*.

¹⁹ Wikipedia: The Globe and Mail. http://en.wikipedia.org/wiki/Globe_and_Mail.

Information Available to Canadian Building Owners About Asbestos, 1970-1995

- Quebec: *Montreal Gazette*, *Montreal Star*, *Sherbrooke Record*, *Quebec Chronicle-Telegraph*, and *The Globe and Mail*.
- Nova Scotia: *Halifax Chronicle-Herald* and *The Globe and Mail*.
- Saskatchewan: *Saskatoon Star-Phoenix* and *Regina Leader Post*.

Examples of the hundreds of articles include the following:

- *Vancouver Province*. (1971, May 7). Asbestos Fear Triggers Strike..
- *Toronto Star*. (1971, November 23). The Deadly Fibres..
- *Vancouver Sun*. (1975, May 20). Hazard Data 'Suppressed.'
- *Vancouver Sun*. (1977, March 16). Asbestos dust doubles risk of throat cancer.
- *Globe and Mail*. (1977, March 23). Asbestos dust levels called hazardous to workers at airport building site.
- *Montreal Gazette*. (1980, April 9). Asbestos: What is it? Is it killing us? Can we stop it?.
- *Montreal Gazette*. (1980, April 25). Asbestos hazard in classrooms ignored almost a year.
- *Toronto Star*. (1980, April 28). A vital asbestos probe.
- *Globe and Mail*. (1980, June 10). Asbestos squad urged for Toronto..
- *Halifax Chronicle-Herald*. (1980, July 16). Schools asbestos study well under way, says Donahoe.
- *Toronto Star*. (1981, February 19). Give schools priority in asbestos clean-up Toronto board pleads.
- *Vancouver Sun*. (1985, November 4). Asbestos trial beats Bleak House.
- *Montreal Gazette*. (1986, January 24). Quebec to fight 'catastrophic' U.S. asbestos ban.
- *Calgary Herald*. (1986, June 14). Asbestos exposure reductions ordered.
- *Winnipeg Free Press*. (1987, October 5). Tidal wave of lawsuits from U.S. could kill industry..
- *Edmonton Journal*. (1989, July 6). Looming U.S. asbestos ban threatens Canadian firms.
- *Edmonton Journal*. (1989, September 14). Asbestos appeal stuck in court.
- *Edmonton Journal*. (1989, September 19). Asbestos stand lambasted.
- *Toronto Star*. (1990, January 31). Schools ordered to obey asbestos law..
- *Toronto Star*. (1990, December 4). Asbestos: Better off left alone..
- *Calgary Herald*. (1991, February 4). Canadian mining companies challenge U.S. asbestos ban.
- *Ottawa Citizen*. (1994, February 24). Parliament Buildings to get long-neglected repairs..
- *Ottawa Citizen*. (1994, September 17). Renovations to start Monday on Rideau Street heritage sit..
- *Toronto Sun*. (1995, April 6). ASBESTOS ALARMS STAFF AT CITY HALL..
- *Calgary Herald*. (1997, November 12). U.S. suits windfall for claimants..
- *Hamilton Spectator*. (1997, August 14). Taking heat: Asbestos..
- *Hamilton Spectator*. (1997, September 16). Vigilance encouraged over school asbestos..

Articles About Asbestos from General and Business magazines

Articles about asbestos appeared in internationally circulated magazines, such as the following:

- *The New Yorker*. (1968, October 12). A Reporter at Large: The Magic Mineral.
- *Time*. (1969, February 7). Industrial Safety: The Toll of Neglect.
- *The New Yorker*. (1971, October 23). Department of Amplification.
- *The New Yorker*. (1973, October 29). Casualties of the Workplace.
- *Time*. (1974, January 28). Death From Dust.
- *Time*. (1975, April 7). Again, Asbestos Is the Problem.

Books About Asbestos Issues

We reviewed numerous books written on topics relating to asbestos in general and specifically to asbestos in buildings during the 1970-1995 period. Selected books published during this period include the following:

- Paul Brodeur. (1985). Outrageous Misconduct: The Asbestos Industry on Trial.

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- Health Effects Institute – Asbestos Research. (1991). Asbestos in Public and Commercial Buildings: A Literature Review and Synthesis of Current Knowledge.

Information Available from Other Sources

Environmental Information Association Publications

Starting as the National Asbestos Council in 1983, the organization later changed its name to the Environmental Information Association. The NAC made information available about environmental issues. NAC circulated newsletters and coordinated conferences relating to environmental issues.

NAC had a presence in Canada, as evidenced by the following example:

A 1991 NAC/EIA announcement for a conference to be held in Pittsburgh, PA, USA on April 7-10, 1992²⁰: The announcement says that the conference will attract participants, including facility managers, from the northeastern US, the Midwest, and "much of Canada." Mention was made that "Canadian Chapter members should expect more details in January." Topics for the sessions included asbestos-related and building-related topics such as the following:

- analysis of low level asbestos-containing bulk building materials by PLM and TEM
- implementing O&M programs
- indoor air quality
- asbestos O&M
- safety and health issues
- legal aspects of sick building syndrome
- use of observational data in O&M plans
- sampling in a return air plenum.

The NAC published an *Environmental Briefing* newsletter that alerted readers about topics of environmental interest. An example of the availability of information is from the November 8, 1991 issue of the *Environmental Briefing*²¹, which refers to items such as asbestos-related hazards, asbestos removal operations, upcoming conferences on asbestos exposure testing during removal, and regulations relating to asbestos.

Labor and Trade Union Contacts

Labor unions have been very involved in asbestos exposure issues for decades in Canada, starting with mining and processing, and continuing with asbestos removal workers and demolition workers and then building maintenance and custodial workers in the late 1970s and early 1980s. Unions included Canadian trade unions as well as International trade unions that had affiliates in the US.

An example of union awareness about and interest in asbestos in the 1970s is as follows:

- Letter from the Superintendent of the Bureau of Building Inspection of the City and County of San Francisco, CA, USA, to the president of the United Brotherhood of Carpenters in Vancouver, BC, dated May 17, 1971. This 1971 letter was sent in reply to

²⁰ NAC/EIA announcement for a conference to be held in Pittsburgh, PA, USA on April 7-10, 1992

²¹ NAC/EIA. *Environmental Briefing*, November 8, 1991.

Information Available to Canadian Building Owners About Asbestos, 1970-1995

the Union's request for copies of regulations in place in California concerning the application of fireproofing. Attachments to this letter include the requested California regulations, a page of information about testing of fireproofing, and the minutes of a meeting of the board of examiners at which the regulations governing the spraying of asbestos-containing products are discussed. This documentation shows that construction trade unions in British Columbia (and all of Canada for that matter) were interested in learning the latest information about asbestos and health hazards.

The 1980-1982 Royal Commission report provides compelling evidence that labor and trade unions in Canada (both national and international) were very aware of and vocal about the issues surrounding asbestos. The RCA report includes 27 unions and labor organizations that provided testimony or otherwise participated in the RCA hearings²². These labor organizations had a stake in the deliberations of the RCA, as well as an interest in issues involving asbestos in general and asbestos in buildings in particular well before the 1980 Commission.

It is clear that information about asbestos in buildings was available to building owners via the construction/building trade unions during the 1970-1995 period.

Active Asbestos-in-Buildings Litigation in Canada

"Asbestos" litigation in the 1970s and 1980s raised public awareness about asbestos. The legal decisions in *Canadian Indemnity Co. v. Canadian Johns-Manville Co.*, in 1988 and on appeal in 1989-1990, although not necessarily about asbestos in buildings, raised public awareness of asbestos and of asbestos litigation.

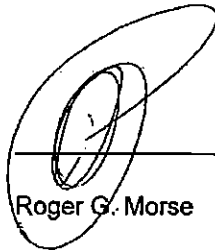
Also in the late 1980s, asbestos-in-buildings litigation began in earnest in Canada. The first of many asbestos-in-buildings actions brought by owners of buildings with in-place asbestos-containing materials was *Privest Properties Ltd. et al v. The Foundation Company of Canada Limited, et al.* This litigation commenced in 1987 with the claimant building owners naming the manufacturer (Grace) of the asbestos-containing product of concern (fireproofing) and all of the contractors, subcontractors and design professionals involved with the installation of the asbestos-containing fireproofing. Beginning with the *Privest* litigation in the late 1980s and through the mid-1990's there was prominent coverage given to the asbestos-in-buildings litigation in Canada. There was prominent coverage given to the asbestos in buildings litigation in Canada such as the following:

- Occupational Health News, Vol. 1, No. 4, Summer 1989
- Environmental Liability and Toxic Tort Litigation, Vancouver, October 25, 1991 (excerpt from conference materials)
- Pinchin Editorial Submitted for Publication in U.K. Asbestos Removal Contractor Association Journal (November 1991)
- J. Singleton, "Yesterday's technology; Today's lawsuit" (1988, January) Canadian Architect, 22, 35

²² RCA report, Appendix A [Granted legal standing by RCA], Appendix B [Witness before RCA], Appendix D [Provided written submissions to RCA], and Appendix E [Provided oral submissions to RCA]. 1984. Published by the Ontario Ministry of the Attorney General.

Information Available to Canadian Building Owners About Asbestos, 1970-1995

- J. Singleton, "Building pollution; Designers beware" (1988, May) Canadian Architect, 59, 63
- J. Singleton, "Asbestos; A ghost from times past" (1989, July) Canadian Architect, 47, 56
- L. Still, "Asbestos use lawsuit launched: 'Environmental terrorism' accusation levelled at firm" Vancouver Sun, January 23, 1992, p. A3.
- L. Still, "Not all tenants told asbestos found in building, company VP testified: Saving federal lease came first" Vancouver Sun, January 29, 1992, p. B4
- Asbestos in Commercial Buildings: Hazard or Hysteria?, Vancouver, November 29, 1994 (solicitation for attendance at seminar and seminar agenda).



Roger G. Morse

12/21/06

Date

Information Available to Canadian Building Owners About Asbestos, 1970-1995

Appendix A

Roger G. Morse, A.I.A. Curriculum Vitae

ROGER G. MORSE, A.I.A.
CURRICULUM VITAE

Education	B. Arch., Rensselaer Polytechnic Institute, Troy, NY, 1971 B.S., Rensselaer Polytechnic Institute, Troy, NY, 1970
Specialized Training in Asbestos, Lead, and Mold in Buildings	<p>Asbestos in Schools and Public Buildings, Page and William Black Post-Graduate School of Medicine of the Mount Sinai School of Medicine, 1984</p> <p>Asbestos Inspector and Management Planner, National Asbestos Training Center, University of Kansas, 1988 w/annual refresher</p> <p>Practices and Procedures for Asbestos Control, National Asbestos Training Center, University of Kansas, 1988 w/annual refresher</p> <p>Respiratory Protection for the Asbestos Abatement Industry, Georgia Institute of Technology, 1989</p> <p>Lead Inspector and Lead Risk Assessor, State University of New York at Buffalo, 2001 w/ tri-annual refresher</p> <p>Mold Assessment and Remediation in Buildings, The Environmental Institute, 2001</p> <p>WUFI-ORNL 3.3, WUFI-Pro3.3 and Weather Analyzer 1.0, Program for calculating coupled heat and moisture transfer in building components, Oak Ridge National Laboratory & Fraunhofer Institute of Building Physics, 2005</p>
Current Professional Experience	<p>Morse Zehnter Associates, Poestenkill, NY; Troy, NY; West Palm Beach, FL 2003-present President. Formed as a division of Dyanki, Inc. to establish greater name recognition for the firm by incorporating the Principals' names.</p> <p>Dyanki, Inc. Poestenkill, NY; Troy, NY; West Palm Beach, FL 1998 - present President. Architectural/Engineering/Industrial Hygiene practice focusing on, indoor air quality, indoor environmental quality, environmental issues in and exterior to buildings, forensic investigations, computer and web applications for building delivery and maintenance, construction management, materials and systems evaluation, design and construction contracts, failure analysis of building systems and materials, energy analyses, solar design and life-cycle cost analyses. Providing mechanical engineering services including specialized services in indoor air quality, humidity control and forensic analysis of HVAC systems. Specific services are provided relative to asbestos, mold, toxic materials, indoor air, material or system failures, architecture, engineering, industrial hygiene, environmental management and on-site analytical services.</p> <p>Roger G. Morse Associates, Poestenkill, NY 1982 - present Architectural practice focusing on the technical aspects of architecture including design/build, land use planning, site selection and evaluation, space planning and programming, design, budget analysis, preparation of contract documents, construction management. Design and monitoring of environmental remediation projects.</p>
Previous Experience	<p>Entek Environmental & Technical Services, Inc., Troy, NY 1985 - 1996 President. Environmental and technical consulting firm founded to provide services relative to environmental issues in and exterior to buildings. Specific services were provided relative to asbestos, toxic materials, indoor air, architecture, engineering, industrial hygiene, environmental management and analytical laboratory services.</p> <p>Morse Ciraulo Associates, Troy, NY 1992 - 1996 Senior Partner. General architectural practice that also provided construction management, energy analyses, solar design life-cycle cost analyses and graphics services.</p>

Previous Experience (Cont.)	Langer-Dion-Morse Associates, Troy, NY 1983 - 1990 Partner. Full partner of architectural firm providing general architecture services, cost estimating services, life-cycle analyses and energy analyses.
	Dodge Chamberlin & Luzine Associates, Rensselaer, NY 1978 - 1982 Project Manager for architectural firm involved with many projects for 1980 Winter Olympics at Lake Placid, NY and projects for schools including asbestos related and energy conservation projects.
	Rensselaer County Bureau of Planning, Troy, NY 1973 - 1978 Served as Town Planner and County Architect.
	Dodge Chamberlin Associates, Rensselaer, NY 1971 - 1973 Project Manager for school projects including design and construction of school facilities.
	Myrick & Chevalier, East Greenbush, NY 1971 Designer, Draftsman.
	State University Construction Fund, Albany, NY 1970 - 1971 Research Associate, Programming Associate.
	Modular Structural Systems, Latham, NY 1969 - 1970 Designer/draftsman for pre-engineered metal buildings and other structures.
	Rensselaer Polytechnic Institute, Troy, NY 1965 - 1971 Research Assistant, Paul Hartek Group. NASA sponsored research of simulated atmospheres of earth & other planets.

Society Memberships	<ul style="list-style-type: none"> • American Institute of Architects • American Industrial Hygiene Association • American Conference of Governmental Industrial Hygienists • International Society of Indoor Air Quality and Climate • Environmental Information Association • National Institute of Building Sciences • Building Owners and Managers Association • American Society of Heating, Refrigeration, and Air Conditioning Engineers • American Society for Testing and Materials • SSPC, The Society for Protective Coatings • American Institute of Steel Construction • Association of Iron and Steel Engineers • National Association of Corrosion Engineers • Photographic Society of America • Society of Fire Protection Engineers • American Society of Civil Engineers • Council on Tall Buildings and Urban Habitat • Construction Specifications Institute • American Concrete Institute • National Roofing Contractors Association • International Code Council • International Concrete Repair Institute
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Current & Past Appointments	National Institute of Building Sciences - Member, steering committee on Indoor Air Quality - Multiple Chemical Sensitivity, Chair subcommittee on Building Design, 2005 to present.
	National Institute of Building Sciences - Member, Project Committee on Whole Building Design Guide, author of chapter on "Mold & Moisture Control in Building Envelopes," 2004 to present.

Current & Past	National Institute of Building Sciences - Member, Project Committee on "Guidelines for Total
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**Appointments
(Cont.)**

Building Commissioning," 2004 to present.
Skyscraper Safety Campaign (SSC) - Technical Advisory Board, 2002 - present.

US Department of Housing and Urban Development (HUD). Peer review panel for HUD Healthy Homes Initiative, 1998-99.

US National CAD Standard (NCS) - Member, Project Committee, National Institute of Building Sciences, 1997 to present.

National Institute of Building Sciences - Consultant for 1996 revisions to "Guidance Manual: Asbestos Operations & Maintenance Work Practices" and "Asbestos Abatement & Management In Buildings, Model Guide Specifications."

National Institute of Building Sciences - Joint venture with Leadtec to prepare "Lead Based Paint Testing and Abatement Guide Specifications," 1994-1995.

National Institute of Building Sciences - Member, steering committee for project committee on "Lead-Based Paint O&M Work Practices Manual," 1993-1995.

American Society of Testing & Materials - Work group to develop "ASTM Standard Guide for Evaluation of Asbestos on Surfaces," 1993 to present.

U.S. EPA - member, Science Advisory Board on Indoor Air Quality and Total Human Exposure, 1992-1994.

National Asbestos Council - Chairman, Indoor Air Quality Task Force, 1992.

U.S. EPA - Technical advisor to Science Advisory Board on Indoor Air Quality and Total Human Exposure, 1992.

Environmental Safety Council of America - Co-chair, Indoor Air Quality Model Law Task Force, 1992-1993.

National Institute of Building Sciences - secretary, Project Committee on Asbestos Operations & Maintenance Work Practices, 1991-1992.

Health Effects Institute - Asbestos Research - member, Literature Review Panel, 5/90 - 9/91 which produced the document: Asbestos in Public and Commercial Buildings: A Literature Review and Synthesis of Current Knowledge, 1991.

U.S. EPA Peer Review Committee for the document: Managing Asbestos In Place - A Building Owner's Guide to Operations and Maintenance Programs for Asbestos-Containing Materials (Green Book), 1990.

Association of Walls and Ceiling Institute - Asbestos Abatement Council, member, editorial review board for *Asbestos Abatement*, 1990.

American Society for Testing and Materials Committee D22.07 on Asbestos Sampling and Analysis, 1989 to present.

National Asbestos Council - Member, Board of Directors and Board Liaison for Specification & Survey Committee, 1988 -1992.

U.S. EPA Committee - Asbestos in Public and Commercial Buildings Policy Dialogue Group, 1988.

U.S. EPA Peer Review Committee for the document: Evaluation of Asbestos Abatement Techniques - Phase 3: Removal, 1988.

Current & Past

U.S. EPA Peer Review Committee for AHERA Inspector/Management Planner

December 21, 2006

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**Appointments
(Cont.)**

Certification Course, 1987.

EPA/NBS Select Committee to develop the Transmission Electron Microscopy clearance protocol for the AHERA regulation, 1987.

Asbestos Hazard Emergency Response Act of 1986 (AHERA) official representative of the American Institute of Architects to the United States Environmental Protection Agency (U.S. EPA) Negotiated Rules Committee, 1987.

U.S. EPA Peer Review Committee for the document: Asbestos-in-Buildings Technical Bulletin: Removal Encapsulants, 1986.

U.S. EPA Peer Review Committee Panel for the Hazard Assessment Guidance Document, 1986.

U.S. EPA Peer Review Committee for the Operations and Maintenance Guidance Document, 1986.

Licensures

- Architectural Licenses in Arizona (12/89), California (1/88), Connecticut (4/84), District of Columbia (4/90), Florida (3/86), Georgia (5/02), Illinois (5/88), Indiana (3/88), Maryland (2/85), New Hampshire (1/89) (inactive), New York (9/76), Ohio (2/86) (inactive), Pennsylvania (12/83) (inactive), Rhode Island (9/87) (inactive) and South Carolina (7/90) (inactive)
- National Council of Architectural Registration Boards (12/83)

**Asbestos & Lead
Certifications**

- Accredited as Asbestos Inspector and Management Planner as required by Asbestos Hazard Emergency Response Act (AHERA) through The National Asbestos Training Center, University of Kansas, certificate #VII KU86350-15
- Accredited as an Abatement Designer through the National Asbestos Training Center of the University of Kansas, certificate #VII KU85740
- New York State Asbestos Certificate #AH-88-06541 for Inspector, Management Planner, Project Designer and Project Supervisor
- Connecticut Asbestos Project Designer #000025
- Connecticut Asbestos Inspector/Management Planner #00023
- Connecticut Lead Inspector Risk Assessor #002125
- Florida Asbestos Consultant License #AF-0000003
- New York City Asbestos Investigator Certificate #75021
- US EPA / NY Lead Inspector Certificate NY-06-112004-789
- US EPA / NY Lead Risk Assessor Certificate NY-06-112004-790
- US EPA / FL Lead Inspector Certificate FL-05-122004-332
- US EPA / FL Lead Risk Assessor Certificate FL-05-122004-333
- Louisiana Asbestos Certificate Inspector #6I01089
- Louisiana Asbestos Management Planner Certificate #6P00103
- Louisiana Asbestos Project Designer Certificate #6D00107
- Louisiana Asbestos Project Supervisor Certificate #6S02267
- New Hampshire Asbestos Certificate #057-ID (inactive)
- Vermont Asbestos Site Inspector Certificate #14807 (inactive)
- Vermont Asbestos Project Designer Certificate #14808 (inactive)
- Massachusetts Asbestos Inspector Certificate #02156 (inactive)
- Massachusetts Asbestos Project Designer Certificate #00839 (inactive)

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Morse, Roger. "Fireproofing at the WTC Towers" Fire Engineering; Oct 2002; Vol 155 issue 10; 110-112.

Morse, Roger. Conference Proceedings, American Industrial Hygiene Conference & Expo. Mold Growth in HVAC Equipment and Ductwork, 2002.

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Langer, A. M. and Morse, R. G. "The World Trade Center Catastrophe: Was the Type of Spray Fire Proofing a Factor in the Collapse of the Twin Towers?" Indoor and Built Environment 2001; Vol 10, Part 6:350-360.

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- University of Kansas
- Georgia Tech Research Institute
- University of Illinois
- Tufts University

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Lectures and Presentations

Presentations on Mold and Moisture Control:

Air & Waste Management Association Annual Conference, New Orleans, 2006

- Disaster Recovery Planning in the Aftermath of Hurricane Katrina
- Methods for Assessing Moisture and Remediating Mold Contamination in HVAC Systems

Ecobuild America Conference, Washington, DC, 2005, "The Second Phone Call"

Ecobuild Federal Conference, Washington, DC, 2005, presentations on:

- "Mold, Moisture and Disasters"
- "Mold and Building Envelopes (Mold: Prevention by Design)"
- "Lessons Learned from Katrina"

Sustainable Buildings Industry Council conference roundtable, 2005: "Hurricane Katrina's effect on building materials"

American Industrial Hygiene Association, AIHce, Anaheim, 2005: "What Makes Some Hotels Susceptible to Mold Growth" and "Methods for Assessing Moisture and Remediating Mold Contamination in HVAC Systems"

National Institute of Building Sciences / Building Environment and Thermal Envelope Council, M6 "Mold, Moisture, Misery, Money and Myth – Plus Management," Chicago, 2004

Connecticut River Valley, AIHA, 2003

National Institute of Building Sciences / Building Environment and Thermal Envelope Council, M4 "Mold, Moisture, Misery and Money," Washington, 2003

Lectures and Presentations (Cont.)

Presentations on Mold and Moisture Control (Cont):

Environmental Information Association, Savannah, 2003

Environmental Breakfast Club, 2003

American Industrial Hygiene Association, AIHce, San Diego, 2002

Air & Waste Management Association Annual Conference, 2002
Environmental Breakfast Club, 2002
American Industrial Hygiene Association, AIHce, New Orleans, 2001
Gypsum Association, 2001

Lecture Faculty Member for The Environmental Institute course: "Mold Assessment and Remediation in Buildings," 2001 to present

Presentations on Building Asset Management:
Building Owners and Managers Association, 2005
International Facility Managers Association, 2005

Presentations on Fireproofing at World Trade Center:
Environmental Information Association, 2002
GA Environmental Protection Division, 2002
Southeastern Regulators Conference, 2002
National Institute of Standards & Technology, 2002
Society of Fire Protective Engineers, 2002
ASTM Johnson Conference, 2002
NYC Dept of Buildings WTC Building Code Taskforce, 2002

Presentations on Indoor Air Quality before such groups as:
GSA Advocacy for Design Excellence, Salt Lake City, 2003
Air & Waste Management Association 95th Annual Conference & Exhibition, 2001
Gypsum Association, 2001
International Facilities Managers Conference, Orlando, FL, 2000
First Annual Indoor Air Quality Conference & Exposition, Tampa, FL, 1992
American Institute of Architects - Convention and Exposition

Presentations on lead control and effects before such groups as:
Lead Tech '95 Annual Conference
Midwest Conference on Lead Poisoning Issues (Sept 95)
National Lead Abatement Council 1995 Annual Conference
Florida Environmental and Asbestos Council 1995 Annual Conference
Construction Specifications Institute, Eastern New York Chapter
Lead Tech '94 Annual Conference

Lecture Faculty Member of the EPA National Asbestos Training Centers at University of Kansas

Advanced Topics Courses on Specifying Asbestos Abatement Projects at EPA National Training Centers:

- | | |
|--------------------------|-----------------------------------|
| • University of Kansas | • Georgia Tech Research Institute |
| • University of Illinois | • Tufts University |

Presentations on asbestos control and effects before such groups as:
American Society for Testing and Materials, Johnson Conference, 2005
Georgia Environmental Information Association, 2001
American Industrial Hygiene Association, Orlando, 2000
Environmental Information Association (formerly National Asbestos Council)
Building Owners and Managers Association
American Institute of Architects
American Society of Heating, Refrigeration, and Air Conditioning Engineers
American Society of Safety Engineers
Association of Wall and Ceiling Industries Asbestos Abatement Council
Defense Research Institute

**Lectures and
Presentations
(Cont.)**

Presentations on asbestos control and effects before such groups as (Cont.):
American Public Works Association
Society of Professional Engineers
Greater Kansas City Conference on Asbestos

Appendix B

Excerpted footnotes from Chapter 9 (Problems of Asbestos in Buildings) and Chapter 10 (Protecting Workers from Asbestos in Buildings) of the Report of The Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario. 1984.

Examples of Available Literature re Problems of Asbestos in Buildings¹

- G. Bruce Doern, *The Politics of Risk: The Identification of Toxic and Other Hazardous Substances in Canada*, Royal Commission on Asbestos Study Series, no. 4 (Toronto: Royal Commission on Asbestos, 1982).
- U.S., Environmental Protection Agency, *National Emission Standard for Asbestos*, 40 CFR 61.21.
- William Reitze et al., "Application of Sprayed Inorganic Fiber Containing Asbestos: Occupational Health Hazards," *American Industrial Hygiene Association Journal* 33:3 (March 1972).
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- U.K., Health and Safety Commission, *Consultative Document: Asbestos Insulation and Coating – Draft Regulations* (London: Her Majesty's Stationary Office, 1981).
- Donald J. Pinchin, *Asbestos in Buildings*, Royal Commission on Asbestos Study Series, no. 8 (Toronto: Royal Commission on Asbestos, 1982).
- J. W. Skidmore and J.S. Jones, "Monitoring an Asbestos Spray Process," *Annals of Occupational Hygiene* 18:2 (September 1975).
- R. Barnes, "Asbestos Spraying, An Occupational and Environmental Hazard," *Medical Journal of Australia* 2:16 (16 October 1976).
- U.S., Environmental Protection Agency, Office of Toxic Substances, *Support Document for Final Rule on Friable Asbestos-Containing Materials in School Buildings: Health Effects and Magnitude of Exposure* (Washington, D.C.: U.S. Environmental Protection Agency, January 1982).
- William J. Nicholson, *Dose-Response Relationships for Asbestos and Inorganic Fibers* (New York: Environmental Sciences Laboratory, Mount Sinai School of Medicine of the City University of New York, 15 February 1981).
- Irving J. Selikoff, William J. Nicholson, and Arthur M. Langer, "Asbestos Air Pollution," *Archives of Environmental Health* 25.
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- U.S., Environmental Protection Agency, *National Emission Standard for Asbestos*, 40 CFR 61.22.
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- Douglas P. Fowler, "Occupational Exposures to Mineral wool," in *Proceedings of the National Workshop on Substitutes for Asbestos*, Arlington, Virginia: 14-16 July 1980, EPA-560/3-80-001 (Washington, D.C.: U.S. Environmental Protection Agency, November 1980).
- Philip E. Enterline, Gary M. Marsh, and Nurtan A. Esman, "Respiratory Disease Among Workers Exposed to Man-Made Mineral Fibers," *American Review of Respiratory Disease* 128:1 (July 1983).
- Eric J. Chatfield, *Measurement of Asbestos Fibre Concentrations in Ambient Atmospheres*, Royal Commission on Asbestos Series, no. 10 (Toronto: Royal Commission on Asbestos, 1983).
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- Robert N. Sawyer and Charles M. Spooner, *Sprayed Asbestos-Containing Materials in Buildings: a Guidance Document, Part 2*, prepared for the U.S. Environmental Protection Agency, March 1978, EPA-450/2-78-014 (Washington, D.C.: U.S. Environmental Protection Agency, March 1979).
- D.J. Hamilton, "Asbestos Insulation in South Australian Buildings: Hazard Assessment and Control Experience," draft prepared for the South Australian Health Commission [Canberra], 1980. (Mimeographed.)
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- Environmental Research* 13:1 (February 1977).
- Patrick Sebastien et al., *Measurement of Asbestos Air Pollution Inside Buildings Sprayed with Asbestos*, translation of document prepared for the government of France, Ministry of Health and Ministry for the Quality of Life Environment, 1977, EPA-560/13/80-026 (Washington, D.C.: U.S. Environmental Protection Agency, August 1980).
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- U.S., Environmental Protection Agency, *Support Document for Final Rule...*, p. 72. *Quebec Mining Act*, R.S.Q. 1977, c. M-13.
- E. Cuyler Hammond, Irving J. Selikoff, Herbert Seidman, "Asbestos Exposure, Cigarette Smoking and Death Rates," *Annals of the New York Academy of Sciences* 330 (14 December 1979): 473-490.
- U.S., Environmental Protection Agency, *Support Document for Proposed Rule on Friable Asbestos-Containing Materials in School Buildings: Health Effects and Magnitude of Exposure*, EPA 560/12-80-003 (Washington, D.C.: U.S. Environmental Protection Agency, October 1980), Table 17.
- Julian Peto, "An Alternative Approach for the risk Assessment of Asbestos in schools," report to the U.S. Environmental Protection Agency, 6 April 1981. (Mimeographed.)
- U.K., Advisory Committee on Asbestos, *Asbestos – Volume 1: Final Report of the Advisory Committee* (Simpson Report), William J. Simpson, Chairman (London: Her Majesty's Stationary Office, 1979), Table 22.
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- Philip H. Byer, Ataur Bacchus, and Rowena Melcher, *Implying the Value of Life From Public Safety Investments*, Research Report, no. 64 (Toronto: University of Toronto-York University Program in Transportation, March 1980).
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- Advisory Task Force on Asbestos in Schools, *Report (A Practical Document)* (Toronto: Metropolitan Toronto School Board, May 1980), Appendix A.
- Letter from Mr. Stanley Orlowski, Associate Chief Architect, Grants Policy Branch, Ontario Ministry of Education to the Royal Commission on Asbestos, 23 February 1983.
- G. Bruce Doern, Michael Prince, and Garth McNaughton, *Living with Contradictions: Health and Safety Regulation and Implementation in Ontario*, Royal Commission on Asbestos Study Series, no. 5 (Toronto: Royal Commission on Asbestos, 1982).

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- Task Force on the Council of Safety Associations, *Asbestos: Evaluation and Control of Insulation and Pipe Lagging*, Asbestos in the Workplace – a series of practical guidebooks, no. 8 (Toronto: Council of Safety Association of Ontario, 1982).
- Karen F. Irving, Rexford G. Alexander, and Harold Bavley, "Asbestos Exposures in Massachusetts Public Schools," *American Industrial Hygiene Association Journal* 41:4 (April 1980).
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- William H. Hallenbeck et al., "Is Chrysotile Asbestos Released from Asbestos-Cement Pipe Into Drinking Water?" *Journal American Water Works Association* 70:2 (January 1978).
- W. Saheed et al., "Distribution and Concentration of Asbestos Dust in Commonplace Construction Activities," a project conducted jointly by the University of Toronto, Department of Preventative Medicine and Biostatistics and the Construction Safety Association of Ontario, research and Development Department, Toronto, 1978, Tables A and B. (Mimeographed).
- A/C Pipe Producers Association, *Recommended Work Practices for AICI Pipe* (Arlington, Virginia: The Association, 1977).
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Appendix C

Text of the Formal Recommendations from the Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario. 1984.

Following is a list of the Commission's recommendations in Part IV of the report, that dealt specifically with "Asbestos in Buildings."

Royal Commission on Asbestos Recommendations Relating to Asbestos in Buildings³

- 9.1 The Ministry of Labour should prohibit the spraying of friable material containing more than 1% asbestos on a dry-weight basis.
- 9.2 The Ministry of Labour should assess, sponsoring studies where appropriate, the health risks associated with the fibres used as substitutes for asbestos in sprayed insulation, with a view to determining what regulations, *if any*, might be appropriate for the use of these substitutes.
- 9.3 The Ministry of Labour should ban the application of friable materials containing more than 1% asbestos by weight as insulation for pipes and boilers.
- 9.4 The Ministry of Labour should identify the compounds used as substitutes for pipe and boiler insulation, with a view to assessing any health risks associated with these substitutes and to determining what regulations, *if any*, might be appropriate for the use of these substitutes.
- 9.5 Legislation should be developed providing that, if significant quantities of friable insulation have fallen onto building surfaces and are being disturbed, the building owner must have the material tested to determine whether it contains asbestos. This requirement should apply only to insulation installed or replaced before 1974.
- 9.6 Legislation should be developed providing that if the test mandated by the circumstances stipulated in Recommendation 9.5 shows that friable asbestos is present, the building owner must enclose, encapsulate, or remove the asbestos-containing material, following the work practices referred to Recommendation 10.17.
- 9.7 The Minister of Labour should communicate with the Minister of Health with a view to establishing responsibility with respect to Recommendations 9.5 and 9.6.
- 9.8 Owners of private homes should be exempt from the duties set out in Recommendations 9.5 and 9.6 above.
- 9.9 The Ministry of Labour should communicate with workers who replace and maintain domestic space-heating boilers to inform them of the risks of working with asbestos and of the appropriate safety precautions for such work.
- 9.10 The Ministry of Labour should prepare a brief flyer describing the possible locations of asbestos on pipes and boilers in the home, the proper method of sampling suspect material, and any appropriate precautions should asbestos be found to be present.
- 10.1 The Ministry of Labour should frame a regulation under the *Occupational Health and Safety Act* respecting asbestos on construction projects and in buildings which includes building custodial and maintenance work. The Ministry should amend the existing Regulation

³ Report of The Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario. 1984. Text of Formal Recommendations, pages 51-58.

Respecting Asbestos so as to specify that its terms do not apply to work activities encompassed by the new regulation.

10.2 The regulation under the *Occupational Health and Safety Act* on asbestos on construction projects and in buildings should require as follows:

- (i) Before the demolition or renovation of any building the characteristics of which raise the possibility that it might contain friable asbestos, the building owner must cause the building or relevant part of the building to be inspected to determine whether friable asbestos-containing materials are present. If friable asbestos-containing materials are present, Recommendation 10.11 should be followed in the case of demolition, and Recommendations 10.14 and 10.17 should be followed in the case of renovation.
- (ii) Before performing maintenance or custodial work which would disturb friable fibrous material in any building the characteristics of which raise the possibility that it might contain asbestos, the building owner must cause the material to be disturbed to be tested for asbestos content. If the material is found to contain asbestos, the employer must cause work practices to be adopted which ensure the health and safety of the maintenance or custodial workers, as outlined in Recommendations 10.6, 10.14, and 10.17. Alternatively, the maintenance or custodial work may proceed without the suspect material being tested, provided that the work practices followed would be safe in the event that the material did contain asbestos.
- (iii) The requirements of (i) and (ii) above should apply only to buildings in which insulation was installed or replaced before 1974.

10.3 The regulation under the *Occupational Health and Safety Act* on asbestos on construction projects and in buildings should require that in any case where a building is required by law to be inspected or tested for asbestos, the building owner must cause the results of the inspection or testing to be recorded as follows:

- (i) in a public place to be designated by the Ministry of Labour;
- (ii) in a document maintained on the building premises, under the care of the building owner or his representative. This document should be required to be shown on request to any government inspector, any building occupant, or any worker who is in the building for the purpose of exercising his trade and who might be exposed to friable fibrous materials; and
- (iii) by placing signs or labels, in areas where asbestos material has been discovered, that clearly indicate the presence of asbestos and warn that the material should not be disturbed without using appropriate precautions.

10.4 The regulation under the *Occupational Health and Safety Act* on asbestos on construction projects and in buildings should provide for standardized laboratory procedures to be followed for analysis of bulk material taken from buildings. These procedures should be reviewed from time to time so as to keep up with developing technology.

10.5 The Ministry of Labour should take steps to institute a register of individuals certified as competent to inspect buildings for asbestos. Certificates of competence should be

awarded by the Ministry of Labour upon an applicant's having satisfactorily completed an approved examination. Incompetence or dishonest practices should result in the certificate being revoked. Only individuals named in the register should be permitted to undertake inspections for asbestos in buildings which are required by law.

- 10.6 The regulation under the *Occupational Health and Safety Act* on asbestos on construction projects and in buildings should require that once friable asbestos-containing material is found in a building, the building owner must institute a programme of management and custodial control. The scope of the programme should depend on the level of hazard created by the asbestos-containing material and should provide for the institution of safe work practices, including worker training therein, for all regular building custodial and maintenance workers. The programme should continue until the asbestos-containing material is removed from the building.
- 10.7 The regulation under the *Occupational Health and Safety Act* on asbestos on construction projects and in buildings should require that a written description of any management and custodial control programme, referred to in Recommendation 10.6 above, be submitted to the Ministry of Labour for approval. The Ministry of Labour should be empowered to approve or vary any programme so submitted, in order to ensure adequate protection for building workers.
- 10.8 The regulation pursuant to the *Occupational Health and Safety Act* on asbestos on construction projects and in buildings should govern the operations of a contractor who contracts with a building owner to take responsibility for worker training and safe work practices under a management and custodial control programme, so that the contractor would have the same responsibility as the building owner for ensuring that the relevant terms of the management and custodial control programme are met.
- 10.9 The Ministry of Labour should take steps to require that every contract for renovation, maintenance, or custodial work specify all known locations of friable asbestos-containing materials in the building which might be disturbed. If, in the course of the work, friable asbestos-containing materials of which the contractor was not informed are discovered in locations which could create some risk to workers, adequate precautions for worker protection should be taken, at the sole expense of the building owner.
- 10.10 The regulation under the *Occupational Health and Safety Act* on asbestos on construction projects and in buildings should provide that where removal, enclosure, or encapsulation of sprayed asbestos-containing insulation is contemplated, encapsulation should only be an option if that insulation is in good condition and is sufficiently thin that it can be thoroughly penetrated by the encapsulant, or if removal or enclosure are not practicable.
- 10.11 The regulation under the *Occupational Health and Safety Act* on asbestos on construction projects and in buildings should require that the owner of a building or structure ensure that prior to the demolition or partial demolition of a building or structure, all friable asbestos-containing materials which might be disturbed are removed from the building or

structure, following procedures for removal referred to in Recommendations 10.14 and 10.17.

10.12 The Ministry of Labour should take steps to require that every contract for demolition specify all known locations of friable asbestos-containing materials in the building or structure which might be disturbed by the demolition work.

10.13 The Ministry of Labour should take steps to provide that all contracts for the demolition of a building or structure in Ontario shall be deemed to include a clause which provides for supplemental payment to the demolition contractor, on a time and materials basis, for all reasonable expenses incurred in removing any friable asbestos-containing material which was not specified in the demolition contract.

10.14 The regulation under the *Occupational Health and Safety Act* on asbestos on construction projects and in buildings should distinguish among three levels of precautions:

"Precautions A":

The minimum precautions, or "Precautions A," should include the following:

- (i) Workers must wear respirators in the hazardous work area [section 6, Proposed Regulation Respecting Asbestos on Construction Projects (PRRACP)].
- (ii) Power tools used in the hazardous work area on asbestos-containing material may be operated only in conjunction with high efficiency particulate air filtered vacuums (section 9, PRRACP).
- (iii) Workers must be educated as to the risks they face when working with asbestos and trained in the appropriate procedures for minimizing those risks (similar to section 11, PRMCP).

"Precautions B":

The intermediate precautions, or "Precautions B," should include, in addition to the precautions set out above as "Precautions A," the following:

- (i) The Ministry of Labour must be notified before the hazardous work begins (section 4, PRRACP).
- (ii) The work area must be separated from the rest of the project by a barrier capable of limiting the spread of asbestos fibres outside the work areas (to be added to PRRACP).
- (iii) Protective clothing must be worn by all workers (section 7, PRRACP).
- (iv) Washing facilities must be available to workers (section 7, PRRACP).
- (v) The hazardous work area must be properly and regularly cleaned (section 8, PRRACP).
- (vi) No loose asbestos is to remain on the floors (section 10, PRRACP).
- (vii) Asbestos-containing materials must be wetted prior to disturbing them, where practicable (section 13, PRRACP).
- (viii) Asbestos work records must be kept for all workers involved in the hazardous work (section 14, PRRACP).
- (ix) All workers involved in the hazardous work are to be subject to medical surveillance (sections 15-18, PRRACP).

"Precautions C":

The maximum precautions, or "Precautions C," should include, in addition to the precautions set out above as "Precautions 'A' and 'B,' " the following:

(I) The work area must be enclosed and sealed (section 13, PRRACP) .

(ii) Showers and change rooms must be available to all workers (section 13, PRRACP).

(111) The work area must be cleaned prior to the commencement of the work and subjected to a thorough two-stage cleanup after the work is completed (section 13, PRRACP).

10.15 The Ministry of Labour should consult with industry and labour to develop numerical definitions of areas of insulation to be classified as "small," "medium," and "large" for the purpose of determining which level of precautions, whether "Precautions 'A,' 'B,' or 'C' " referred to in Recommendation 10.14 above, is to be applied to asbestos control work projects of varying types and sizes.

10.16 The Ministry of Labour should consult with industry and labour to develop definitions of major, intermediate, and minor renovation, maintenance, and custodial projects for the purpose of determining which level of precautions, whether "Precautions 'A,' 'B,' or 'C' " referred to in Recommendation 10.14 above, is to be applied in each instance.

10.17 The Ministry of Labour should consult with industry and labour to determine, for the purposes of the regulation under the *Occupational Health and Safety Act* on asbestos on construction projects and in buildings, the appropriate precautions to be applied to large, medium, and small control jobs and to major, intermediate, and minor renovations and maintenance and custodial projects, distinguishing, where appropriate, among wet-sprayed insulation, dry-sprayed insulation, and pipe and boiler insulation.

10.18 The regulation under the *Occupational Health and Safety Act* on asbestos on construction projects and in buildings should require that types of work in a hazardous work area which are not otherwise dealt with in that regulation shall only be performed in accordance with "Precautions A," described in Recommendation 10.14.

10.19 The regulation under the *Occupational Health and Safety Act* on asbestos on construction projects and in buildings should provide that where a worker frequently performs work calling for "Precautions A," described in Recommendation 10.14, asbestos work records should be kept for that worker and that worker should be subject to medical surveillance, as if the work called for "Precautions B."

10.20 The Ministry of Labour should, in consultation with industry and labour, prepare an alternative set of precautions for asbestos removal work outdoors that would allow the substitution of local exhaust ventilation for the use of an enclosure in situations where enclosure is impracticable. This alternative set of precautions should be included in the regulation under the *Occupational Health and Safety Act* on asbestos on construction projects and in buildings.

10.21 The regulation under the *Occupational Health and Safety Act* on asbestos on construction projects and in buildings should provide that work procedures may be used which vary from those prescribed if the protection afforded by the variant procedures is equal to or

exceeds the protection afforded by the prescribed procedures, or if it is demonstrated to the Ministry of Labour that those variant work procedures would always result in average worker exposures which, in the case of chrysotile, are at or lower than one-half the control limit and, in the case of crocidolite or amosite, are at or lower than one-half the exposure values prescribed in Recommendations 7.13 and 7.15. However, the use of variant work procedures should not in any way detract from requirements that would otherwise apply to the particular work situations regarding worker training, Ministry of Labour notification, asbestos waste handling, cleaning of the hazardous work area, wetting of asbestos, asbestos work records, or medical surveillance.

10.22 The Ministry of Labour should conduct air monitoring of control work, renovation work, and of maintenance and custodial work, from time to time, to determine whether the safety precautions referred to in Recommendations 10.14, 10.17, and 10.20 above are sufficient to ensure worker safety or are unnecessarily strict.

10.23 The Ministry of Labour should explore methods of communicating with control, renovation, maintenance, and custodial workers to inform them of the risks they face when working in buildings containing friable asbestos and of the appropriate procedures for minimizing those risks.

10.24 The Ministry of Labour should take steps to institute a register of individuals certified as competent to supervise the enclosure, encapsulation, or removal of asbestos-containing sprayed insulation and pipe and boiler insulation. (Certificates of competence should be awarded by the Ministry of Labour: incompetence should result in the certificate being revoked.

10.25 The Ministry of Labour should take steps to require that no asbestos enclosure, encapsulation, or removal may take place without being supervised by a registered work supervisor. The Ministry of Labour should determine what exceptions to this requirement should be made for small jobs.

Appendix D

Selected Building Related Journal Articles

Building-related Journals

Examples of articles about asbestos in buildings that would have been available to the building owner include the following:

- (1970, February). Management and the Four Pollutions: Air, Water, Waste, Noise: An In Depth Study by Buildings' Staff. *Buildings*.
- (1971, July). High Rise Fire. *Buildings*.
- (1971, November). [Azrock] Notice "Inaccurate methods of air pollution measurement" regarding ASTM and air quality enforcement. *Buildings*.
- (1971, November). Into the next century at U.S. Steel. *Buildings*.
- (1973, August). Pollution free fireproofing material. *Buildings*.
- (1970, September). Toronto's first two-level mall opens on time in spite of labour disputes. *Canadian Building*.
- (1972). New design concept cures hospital obsolescence: Innovative architects provide for McMaster Medical Centre's future. *Canadian Building News*.
- (1995, July 3). Landmark Asbestos Ruling Expected Soon. *Thompson's Insurance News*, 5.
- (1995). Case Law: Asbestos in Buildings. *ECOBulletin*, 9.

Appendix E

Selected Articles about Asbestos in Schools

Examples of information that was available about asbestos in schools include the following:

- U.S., Environmental Protection Agency, Office of Toxic Substances, Support Document for Final Rule on Friable Asbestos-Containing Materials in School Buildings: Health Effects and Magnitude of Exposure (Washington, D.C.: U.S. Environmental Protection Agency, January 1982).
- U.S., Environmental Protection Agency, Support Document for Proposed Rule on Friable Asbestos-Containing Materials in School Buildings: Health Effects and Magnitude of Exposure, EPA 560/ 12-80-003 (Washington, D.C.: U.S. Environmental Protection Agency, October 1980), Table 17.
- Julian Peto, "An Alternative Approach for the risk Assessment of Asbestos in schools," report to the U.S. Environmental Protection Agency, 6 April 1981. (Mimeographed.)
- U.S., Environmental Protection Agency, "Asbestos; Friable Asbestos-Containing Materials in Schools; Identification and Notification," Federal Register, vol. 47, no. 103, 27 May 1982.
- Advisory Task Force on Asbestos in Schools, Report (A Practical Document) (Toronto: Metropolitan Toronto School Board, May 1980), Appendix A.
- Letter from Mr. Stanley Orłowski, Associate Chief Architect, Grants Policy Branch, Ontario Ministry of Education to the Royal Commission on Asbestos, 23 February 1983.
- Karen F. Irving, Rexford G. Alexander, and Harold Bavley, "Asbestos Exposures in Massachusetts Public Schools," *American Industrial Hygiene Association Journal* 41:4 (April 1980).

Following is a list of universities from which consultants were engaged by the RCA in the 1980-1984 period.

University Consultants Engaged by the Royal Commission on Asbestos⁴

- University of Toronto
- University of Connecticut
- University of British Columbia
- University of Waterloo
- Carleton University
- McMaster University
- University of Oxford
- McGill University
- University of Newcastle-upon-Tyne
- University of Western Ontario.

⁴ Report of The Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario. 1984. Excerpts from Appendix H: Consultants Engaged by the Royal Commission on Asbestos, pages 739-874.

Appendix F

Selected Architecture and Specifier Articles

Architect and Specifier Contacts

Examples of articles about asbestos in buildings that would have been available to the architectural community include the following:

- (1970, December). Technology: Spray Fireproofing —faces controls or ban — research links asbestos to cancer. *Architectural Forum*.
- (1970, May). Forum. *Forum*.
- (1971, February). News in brief: Sprayed-asbestos fireproofing has been banned in Philadelphia. *Architectural Record*.
- (1970, February). Controlling Construction Pollution. *Progressive Architecture*.
- (1970, July). Hazardous Materials. *Progressive Architecture*.
- (1971, June). Materials and Methods: Understanding Sprayed Fireproofing. *Progressive Architecture*.
- (1973, November). Rigid Board Fireproofing. *Progressive Architecture*.
- (1974, April). Life Safety. *Progressive Architecture*.
- (1988, January). Yesterday's technology: Today's Lawsuit. *Canadian Architect*, 22(35).
- (1988, May). Building Pollution: Designers Beware. *Canadian Architect*, 59(63).
- (1989, July). Asbestos: A Ghost from Times Past. *Canadian Architect*, 47(56).
- (1965, April). Architectural-Engineering Specification Study on Building Insulation. *Construction Specifier*.
- (1972, February). U.S. Vs. You: Professional Liability of Architects, Engineers and Specifiers under OSHA. *Construction Specifier*.
- (1973, July). The Occupational Safety and Health Act, Its Relationship to Building Codes and the Design Professions. *Construction Specifier*.

Appendix G

Selected Engineering Articles

Examples of articles about asbestos in buildings that would have been available to the engineering community include the following:

- (1971, June). Fire Proofing in Buildings is Important Too. *Canadian Consulting Engineer*.
- (1975, September/October). Asbestos and Algae Research Needed. *Engineering Journal*.
- (1970, April 2). Loose Asbestos Fiber Seen As Cancer Threat to Men in Building Trades. *Engineering News-Record*.
- (1970, May 7). Sprayed-asbestos fireproofing work halted. *Engineering News-Record*.
- (1970, June 9). City May Ban Sprayed-asbestos Fireproofing. *Engineering News-Record*.
- (1970, June 4). Asbestos Hearing Held: Danger of Lung Cancer Cited as New York City Ponders Ban. *Engineering News-Record*.
- (1970, July 2). State Curbs Asbestos. *Engineering News-Record*.
- (1970, November 26). Proposed Code Would Prohibit Sprayed-Asbestos Fireproofing. *Engineering News-Record*.
- (1970, December 24). A City Bans Sprayed Asbestos Fireproofing. *Engineering News-Record*.
- (1971, January 21). Building Systems and Fires Will Bring Changes to Codes. *Engineering News-Record*.
- (1971, March 11). Asbestos Group Backs Strict Control of Spray Jobs. *Engineering News-Record*.
- (1971, March 11). Construction Industry Seeks Answers to Problem of Fire in Tall Buildings. *Engineering News-Record*.
- (1971, June 3). Second City Prohibits Use of Spray-applied Asbestos. *Engineering News-Record*.
- (1971, August 19). Building Designers Join War on Air Pollution. *Engineering News-Record*.
- (1971, August 26). Respiratory Protection. *Engineering News-Record*.
- (1971, October 7). Pollution Control Standards Could Curtail Asbestos Use. *Engineering News-Record*.
- (1972, February 10). Federal Ban on Asbestos Spraying is Likely to Stand. *Engineering News-Record*.
- (1972, August 10). Asbestos Workers Who Smoke in Greater Danger of Cancer. *Engineering News-Record*.
- (1973, January 11). Asbestos: a Potential Danger to Occupants. *Engineering News-Record*.
- (1973, February 15). Cost of Compliance: Asbestos is Topic of First Seminar on OSHA Standards. *Engineering News-Record*.
- (1973, June 7). New Dry Fireproofing System Developed. *Engineering News-Record*.
- (1973, June 7). New Fireproofing System. *Engineering News-Record*.
- (1974, September 19). Asbestos Fallout: Building Faces \$200,000 job of Removing Asbestos Ceiling. *Engineering News Record*.
- (1974, October 3). Study Finds Cancer-Woodworking Tie. *Engineering News Record*.
- (1975, March 6). Canadian Laborers Balk at Asbestos. *Engineering News Record*.

Appendix H

Selected Construction/Building Trades Articles

Examples of articles about asbestos in buildings that would have been available to the construction/building trades community include the following:

- (1970, February). Management and the Four Pollutions: Air, water, Waste, Noise: An In Depth Study by Buildings' Staff. *Buildings*.
- (1971, July). High Rise Fire. *Buildings*.
- (1971, November). [Azrock] Notice "Inaccurate methods of air pollution measurement" regarding ASTM and air quality enforcement. *Buildings*.
- (1971, November). Into the next century at U.S. Steel. *Buildings*.
- (1973, August). Pollution free fireproofing material. *Buildings*.

- (1970, September). Toronto's first two-level mall opens on time in spite of labour disputes. *Canadian Building*.

- (1972). New design concept cures hospital obsolescence: Innovative architects provide for McMaster Medical Centre's future. *Canadian Building News*.

- (1971, July 5). Asbestos faces tough set of new rules. *Heavy Construction News*.
- (1971, August 2). Letter [to editor] "Asbestos Insulation" RE; Asbestos faces tough set of new rules. *Heavy Construction News*.
- (1971, August 9). Tougher asbestos rules sought in B.C. *Heavy Construction News*.
- (1971, September 13). Advertisement for "Sprayed Asbestos Insulation" for licensing arrangements with Canadian companies. *Heavy Construction News*.

- (1961, December). Notice "Asbestos Limpus Program". *The Trowel*.
- (1963, February). Notice "Limpet Asbestos Under Plaster Jurisdiction". *The Trowel*.
- (1967, March). Notice "Unions Exchange Men on Sprayed Asbestos". *The Trowel*.
- (1968, August). Mono-Cote provides Progressive Plastering Product. *The Trowel*.
- (1971, May). On Pacific Centre: Plasterers Refute Asbestos Hazard by Continuing Spray Operation. *The Trowel*.
- (1972, November). Asbestos Dust Control Methods Outlined by British Expert. *The Trowel*.
- (1973, June). WCB Reports Asbestosis Not Serious Problem. *The Trowel*.
- (1974, February). Chalifour Moves to New Location. *The Trowel*.
- (1975, March). Gallagher Reports: Fireproofing & Insulation Advice Offered Designers by Vince Strother. *The Trowel*.
- (1975, April). Case for Ontario Construction Cabinet Minister Applies to B.C. *The Trowel*.
- (1975, May). Standards Manual Put Underway by Assignment to Jim Findlay. *The Trowel*.
- (1976, February). Notice of "Donalco Questions Spec Revisions". *The Trowel*.

- (1968, May). Notice "Pyrospray franchises set". *Plastering Industries*.
- (1968, September). Whitehall Doing Vancouver Tower. *Plastering Industries*.

- (1970, April). Sprayed Asbestos Viewed with Growing Alarm. *Walls & Ceilings* (formerly *Plastering Industries*).
- (1970, July). A Mid-term Stopover in Winnipeg, and Then on to Puerto Rico. *Walls & Ceilings* (formerly *Plastering Industries*).
- (1970, September). Sprayed Asbestos. *Walls & Ceilings* (formerly *Plastering Industries*).

Industries).

- (1970, September). No Asbestos – Spra-Don Gets Approval. *Walls & Ceilings* (formerly *Plastering Industries*).
- (1970, October). Non-Asbestos Coating. *Walls & Ceilings* (formerly *Plastering Industries*).
- (1970, October). Letters from the Readers "Protest News Release". *Walls & Ceilings* (formerly *Plastering Industries*).
- (1970, November). Business, Industry, Labor: Asbestos General Hazard? *Walls & Ceilings* (formerly *Plastering Industries*).
- (1970, November). Notice of Sprayed Fireproofing Symposium Planned. *Walls & Ceilings* (formerly *Plastering Industries*).
- (1971, April). Notice of Fireproofing Symposium. *Walls & Ceilings* (formerly *Plastering Industries*).
- (1971, July). Three Symposiums Scheduled! (shows subjects including Sprayed Fireproofing) [International Association of Wall & Ceiling Contractors.] *Walls & Ceilings* (formerly *Plastering Industries*).
- (1971, July). Chicago Bans Asbestos. *Walls & Ceilings* (formerly *Plastering Industries*).
- (1971, July). iaWCC Board Backs Fireproofing Inspection. *Walls & Ceilings* (formerly *Plastering Industries*).
- (1971, July). Notice of In-Depth Symposium on Sprayed Fireproofing [International Association of Wall & Ceiling Contractors.] *Walls & Ceilings* (formerly *Plastering Industries*).
- (1971, August). iaWCC Fireproofing Symposium Sets Attendance Records. *Walls & Ceilings* (formerly *Plastering Industries*).
- (1971, September). Future Fireproofing. *Walls & Ceilings* (formerly *Plastering Industries*).
- (1971, October). Photo of men at a recent Chicago Fireproofing Symposium. *Walls & Ceilings* (formerly *Plastering Industries*).
- (1972, February). List of iaWCC Committees (includes Sprayed Fireproofing). *Walls & Ceilings* (formerly *Plastering Industries*).
- (1972, February). Fireproofing Know-How. *Walls & Ceilings* (formerly *Plastering Industries*).
- (1972, March). Asbestos Standards Strict. *Walls & Ceilings* (formerly *Plastering Industries*).
- (1972, May). Even Trace Amounts of Asbestos May be Outlawed. *Walls & Ceilings* (formerly *Plastering Industries*).
- (1972, May). Illinois Sets Asbestos Rule. *Walls & Ceilings* (formerly *Plastering Industries*).
- (1972, August). Asbestos Ban Delayed. *Walls & Ceilings* (formerly *Plastering Industries*).
- (1972, October). Chicago Halts Asbestos. *Walls & Ceilings* (formerly *Plastering Industries*).
- (1972, October). Industry - Proprietary Specs - Which is the Best? *Walls & Ceilings* (formerly *Plastering Industries*).
- (1973, March). Notice "Levine: No Asbestos Need". *Walls & Ceilings* (formerly *Plastering Industries*).
- (1973, April). OSHA Fines Set. *Walls & Ceilings* (formerly *Plastering Industries*).
- (1973, April). What the Well-Dressed Fireproofers Will Require. *Walls & Ceilings* (formerly *Plastering Industries*).
- (1973, May). Asbestos War Continues. *Walls & Ceilings* (formerly *Plastering Industries*).
- (1973, July). Notice "Sprayless Fireproofing". *Walls & Ceilings* (formerly *Plastering Industries*).
- (1973, July). Technical Up-Date at iaWCC Convention. *Walls & Ceilings* (formerly *Plastering Industries*).
- (1973, October). Notice of a meeting of the Spray Fireproofing Section of the

- iaWCC Technical Committee. *Walls & Ceilings* (formerly *Plastering Industries*).
- (1973, October). [U.S. Minerals] Notice "An Important Message to Fireproofing Contractors" USM certifies Cafco materials absolutely free of asbestos. OSHA "Standard for Exposure to Asbestos Dust" does not apply. *Walls & Ceilings* (formerly *Plastering Industries*).
 - (1973, November). [U.S. Minerals] Notice "An Important Message to Fireproofing Contractors" USM certifies Cafco materials absolutely free of asbestos. OSHA "Standard for Exposure to Asbestos Dust" does not apply. *Walls & Ceilings* (formerly *Plastering Industries*).
 - (1973, November). U.S.G. Introduces Non-Asbestos Texturing Material on West Coast. *Walls & Ceilings* (formerly *Plastering Industries*).
 - (1974, March). Asbestos Ban. *Walls & Ceilings* (formerly *Plastering Industries*).
 - (1974, March). Spray Fireproofing. *Walls & Ceilings* (formerly *Plastering Industries*).
 - (1974, May). Notice "Comments Asked on Fireproofing" iaWCC members will be asked to comment on "Inspection Procedure for Field Applied Sprayed Fire Protection Materials". *Walls & Ceilings* (formerly *Plastering Industries*).
 - (1974, May). More on Spray Fireproofing. *Walls & Ceilings* (formerly *Plastering Industries*).
 - (1974, May). Asbestos Danger Cited. *Walls & Ceilings* (formerly *Plastering Industries*).
 - (1974, August). OSHA Cites New Asbestos Dangers. *Walls & Ceilings* (formerly *Plastering Industries*).
 - (1974, September). Indianapolis Sprayed Fireproofing. *Walls & Ceilings* (formerly *Plastering Industries*).
 - (1975, March). New York Tests for Asbestosis. *Walls & Ceilings* (formerly *Plastering Industries*).
 - (1975, June). Convention Panel Looks at Asbestos. *Walls & Ceilings* (formerly *Plastering Industries*).
 - (1975, July). Codes & Specs Groups Studies Asbestos Mess. *Walls & Ceilings* (formerly *Plastering Industries*).
 - (1975, July). Canada Looks at Drywall cement Peril. *Walls & Ceilings* (formerly *Plastering Industries*).
 - (1980, September). Educate or Litigate. *Construction Canada*, 26-27.
 - (1988, February). The Specifier and Indoor Air Quality. *Construction Canada*, 48, 23-31.

Appendix I

Newspaper Articles about Asbestos in Buildings

The following tables provide examples of Canadian newspaper articles that would serve to increase the awareness about asbestos by the Canadian public in general and Canadian building owners in particular.

Canadian Newspapers

National (Alberta, Ontario, British Columbia, Manitoba, Quebec, Nova Scotia, Newfoundland & Labrador)

- *Globe and Mail*. (1966, May 26). Asbestos Particles In Air Regarded as a Health Hazard.
- *Globe and Mail*. (1972, July 27). Asbestos Confirmed as Link to Cancer.
- *Globe and Mail*. (1973, May 3). Death Rate Up: Hazards of Asbestos Cited by N.Y. Doctor.
- *Globe and Mail*. (1974, December 17). Asbestos Pollution in Drinking Water, IJC Report Warns.
- *Globe and Mail*. (1975, January 8). Drinking asbestos in Water in Equated to Russian Roulette.
- *Globe and Mail*. (1975, January 9). Drinking asbestos in Water in Equated to Russian Roulette.
- *Globe and Mail*. (1975, February 13). Asbestos Scare Pushed Unions to Move to Protect Members From Job Dangers.
- *Globe and Mail*. (1975, March 15). No Safe Level of Exposure Known: Union Wants Rules on Asbestos Made Twice as Strict.
- *Globe and Mail*. (1975, May 14). Health Ministry Wants to Cut Blue Asbestos Air Level by 90%.
- *Globe and Mail*. (1975, June 6). Delivered Lunches at Asbestos Plant, Woman has Cancer.
- *Globe and Mail*. (1975, June 20). Health Officials Call For a Ban on Brown Variety of Asbestos.
- *Globe and Mail*. (1975, July 7). Health Hazard in Lakes: Board Urges Study of Asbestos in Water.
- *Globe and Mail*. (1975, August 9). Asbestos Said Hazard in Patching Materials.
- *Globe and Mail*. (1977, March 16). Death by asbestosis haunts family.
- *Globe and Mail*. (1977, March 16). New evidence links asbestos to throat cancer.
- *Globe and Mail*. (1977, March 23). Asbestos dust levels called hazardous to workers at airport building site.
- *Globe and Mail*. (1977, October 21). Dangerous omission.
- *Globe and Mail*. (1977, November 7). Expert claims risk of cancer doubles in asbestos workers.
- *Globe and Mail*. (1978, September 13). Asbestos tops list of chemicals cited in soaring industrial cancer figures.
- *Globe and Mail*. (1979, July 31). Retarded children breathe asbestos in their classroom.
- *Globe and Mail*. (1979, August 2). School for retarded to stay open despite report on asbestos fibre.
- *Globe and Mail*. (1979, August 3). Schools asked to look for asbestos.
- *Globe and Mail*. (1979, September 1). U.S. to probe asbestos risks in 150 products.
- *Globe and Mail*. (1979, October 25). Asbestos fibres falling off ceiling at Malton airport.
- *Globe and Mail*. (1979, November 1). Asbestos repairs are urged for two schools.
- *Globe and Mail*. (1980, January 18). Asbestos will cause 15% of cancers, MD predicts.
- *Globe and Mail*. (1980, March 6). Up to 150 buildings affected Remove or seal asbestos, schools told.
- *Globe and Mail*. (1980, March 28). School carpenter died of cancer from asbestos, jury rules.
- *Globe and Mail*. (1980, March 29). Didn't get warning over asbestos use, school board says.
- *Globe and Mail*. (1980, March 31). Minister won't move on asbestos ban.
- *Globe and Mail*. (1980, April 2). Minister predicts asbestos law change.

- *Globe and Mail*. (1980, April 3). Quebec, Manitoba upset over asbestos in schools.
- *Globe and Mail*. (1980, April 9). Public told not to 'panic' during asbestos cleanup.
- *Globe and Mail*. (1980, April 10). Asbestos revisited.
- *Globe and Mail*. (1980, April 16). Hospital to probe asbestos in vents.
- *Globe and Mail*. (1980, April 17). Children's hospital official contradicted on asbestos.
- *Globe and Mail*. (1980, April 22). Ontario orders asbestos probe.
- *Globe and Mail*. (1980, April 30). The facts on asbestos.
- *Globe and Mail*. (1980, May 6). Service disrupted as Bell runs tests for asbestos in air.
- *Globe and Mail*. (1980, May 12). Asbestos levels safe at Bell.
- *Globe and Mail*. (1980, May 26). Largest studio closed by CBC over asbestos.
- *Globe and Mail*. (1980, June 10). 'Asbestos squad' urged for Toronto.
- *Globe and Mail*. (1980, June 12). Airport workers tested for effects of asbestos fibres.
- *Globe and Mail*. (1980, July 30). Clean-up set on asbestos.
- *Globe and Mail*. (1980, August 29). School start is delayed by asbestos.
- *Globe and Mail*. (1980, August 30). ACROSS CANADA Asbestos found in 15 N.S. schools.
- *Globe and Mail*. (1980, September 20). ACROSS CANADA Quebec gives boards asbestos assistance.
- *Globe and Mail*. (1980, November 26). IN BRIEF TTC to remove subway asbestos.
- *Globe and Mail*. (1981, January 30). Cost estimate hits \$19 million for ridding schools of asbestos.
- *Globe and Mail*. (1981, February 18). Tories share blame for asbestos deaths, Cassidy tells hearing.
- *Globe and Mail*. (1981, June 12). 5 guidelines for removal of asbestos.
- *Globe and Mail*. (1981, July 10). Ontario to regulate asbestos before commission issues study.
- *Globe and Mail*. (1981, July 16). Asbestos threat to workers posed by renovations wave.
- *Globe and Mail*. (1982, February 20). Royal commission on asbestos Company officials will have to testify.
- *Globe and Mail*. (1982, May 25). INTERNATIONAL REPORT Asbestos fibres.
- *Globe and Mail*. (1983, August 16). Asbestos removal started on tower at Malton airport.
- *Globe and Mail*. (1983, December 5). EPA ban on asbestos too severe: Chretien.
- *Globe and Mail*. (1984, January 24). Small U.S. asbestos firms inundated by suits.
- *Globe and Mail*. (1984, May 21). The deadly fibres (1).
- *Globe and Mail*. (1984, May 22). The deadly fibres (2).
- *Globe and Mail*. (1985, February 5). Manville reaches settlements with 3 more insurers.
- *Globe and Mail*. (1985, July 29). Studies tie tumors to asbestos on job.
- *Globe and Mail*. (1975, October 17). Manville claimants set to accept settlement.
- *Globe and Mail*. (1986, February 18). Tests for asbestos fibres in Quebec schools called fraud.
- *Globe and Mail*. (1986, June 28). Insurers sniff at insulation with asbestos.
- *Globe and Mail*. (1986, July 1). Group files arguments over U.S. asbestos ban.
- *Globe and Mail*. (1986, July 29). Group seeks EPA hearings on asbestos.
- *Globe and Mail*. (1986, August 23). Art gallery ordered to eliminate hazard.
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- *Vancouver Sun*. (1971, May 6). City Tower Job Halted: Asbestos Spray Sparks Pacific Centre Protest.
- *Vancouver Sun*. (1971, May 7). Fear of Spray Halts Pacific Centre Work.
- *Vancouver Sun*. (1971, August 27). Asbestos Workers' Death Rate Higher.
- *Vancouver Sun*. (1972, July 27). Asbestos Exposure Is Linked to Cancer in Cigarette Smoker.
- *Vancouver Sun*. (1972, July 28). Asbestos Use Curbed.
- *Vancouver Sun*. (1973, February 24). Asbestos a Potential Cancer Cause; Found in Everything From Gin to Gum.
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- *Vancouver Sun*. (1975, May 20). Hazard Data 'Suppressed.'
- *Vancouver Sun*. (1975, June 9). Asbestos Level not Measurable.
- *Vancouver Sun*. (1975, June 18). Respirators Still in Use.
- *Vancouver Sun*. (1977, March 16). Asbestos dust doubles risk of throat cancer.
- *Vancouver Sun*. (1984, February 9). Asbestos link widens.

- *Vancouver Sun*. (1985, November 4). Asbestos trial beats Bleak House.
- *Vancouver Sun*. (1986, January 17). Doctor predicts death from asbestos exposure.
- *Vancouver Sun*. (1986, January 23). U.S. seeking ban on asbestos imports.
- *Vancouver Sun*. (1986, January 26). Dying man fights for compensation.
- *Vancouver Sun*. (1987m January 27). WCB puts rush on review in case of dying miner.
- *Vancouver Sun*. (1987, February 12). Asbestos closes hospital project.
- *Vancouver Sun*. (1989, September 15). Asbestos exports simply immoral.
- *Vancouver Sun*. (1988, October 7). Tougher safety regulations sought.
- *Vancouver Sun*. (1991, November 23). Don't seal in dangerous pollutants when you seal out the winter cold.
- *Vancouver Sun*. (1991, December 24). Crumbling buildings to cost taxpayers some \$ 226 million.
- *Vancouver Sun*. (1992, January 23). Asbestos use lawsuit launched: 'Environmental terrorism' accusation leveled at firm.
- *Vancouver Sun*. (1992, January 29). Not all tenants told asbestos found in building, company VP testifies: Saving federal lease came first.
- *Vancouver Sun*. (1993, February 2). Firefighters welcome two WCB rulings.
- *Vancouver Sun*. (1993, February 17). B.C. taxpayers spent \$ 11 million keeping Shaughnessy hospital alive during past 10 years.
- *Vancouver Sun*. (1993, November 19). Victoria man wins key ruling in fight with asbestos industry.
- *Vancouver Sun*. (1994, February 5). Hydro workers flown to Texas for secret case.
- *Vancouver Sun*. (1995, June 15). Magee school 'a dangerous rabbit warren': Community battling for replacement.
- *Vancouver Sun*. (1995, November 10). Asbestos can make removing some old vinyl tile hazardous.
- *Vancouver Times*. (1965, May 11). Canada a Big Producer: Cancer Linked to Asbestos.
- *Vancouver Province*. (1967, June 20). Cancer Link in Asbestos, Cigarettes.
- *Vancouver Province*. (1971, April 28). Pacific Centre Workers Claim Cancer Threat.
- *Vancouver Province*. (1971, April 29). Pacific Centre Chief Denies Asbestos Spray is Dangerous.
- *Vancouver Province*. (1971, April 30). Asbestos Safety Rules Laid.
- *Vancouver Province*. (1971, May 7). Asbestos Fear Triggers Strike.
- *Vancouver Province*. (1971, May 8). Asbestos Walk-out is Settled.
- *Vancouver Province*. (1973, February 24). Asbestos a 'time bomb,' Doctor Claims.
- *Vancouver Province*. (1975, May 20). Doctors Get Blame in Asbestos Deaths.
- *Victoria Colonist*. (1968, March 28). Asbestos Cancer Suspect.
- *Victoria Daily Colonist*. (1971, March 6). Dockyard Lung Ailments Sparks Disability Plea.
- *The Columbian*. (1970, May 26). Controls Urged: Asbestos Worst Pollutant.

Manitoba

- *Winnipeg Free Press*. (1968, January 1). Doctors Trace Rare Cancer to Contact With Asbestos.

- *Winnipeg Free Press*. (1977, April 5). Cancer-asbestos link under study.
- *Winnipeg Free Press*. (1978, December 18). Ban on some asbestos uses likely in April.
- *Winnipeg Free Press*. (1979, January 18). Asbestos 'near danger-level' in big cities' air.
- *Winnipeg Free Press*. (1979, August 22). Schools may get asbestos survey.
- *Winnipeg Free Press*. (1979, August 30). Asbestos danger in ceiling tiles feared at schools.
- *Winnipeg Free Press*. (1979, November 10). MacMaster says asbestos control plan in works.
- *Winnipeg Free Press*. (1980, September 6). Prof warns against asbestos in piping.
- *Winnipeg Free Press*. (1981, March 4). Trustee finds potential health risk in school.
- *Winnipeg Free Press*. (1981, April 6). Asbestos removal bill \$8 million.
- *Winnipeg Free Press*. (1984, January 3). Asbestos fault at city hall spurs removal.
- *Winnipeg Free Press*. (1984, January 4). Asbestos hazard down, official says.
- *Winnipeg Free Press*. (1984, January 11). Province to reimburse city school division.
- *Winnipeg Free Press*. (1986, January 30). City bans asbestos-cement pipes: Report on health risks of Winnipeg's water expected next month.
- *Winnipeg Free Press*. (1986, February 12). City considers PR effort to battle asbestos concerns.
- *Winnipeg Free Press*. (1986, February 18). Test for asbestos fibres in schools termed "fraud".
- *Winnipeg Free Press*. (1986, March 1). Cancer case studies urged: Asbestos-linked illness rates investigation, researcher says.
- *Winnipeg Free Press*. (1986, July 18). Asbestos ban urged at hearings: Disease victims seek swift elimination of mineral's uses, imports.
- *Winnipeg Free Press*. (1987, February 26). Deadly cover-up alleged.
- *Winnipeg Free Press*. (1987, October 5). Asbestos and your health (Part 3: Third world struggle: Canada's promotion of mineral is inviting disaster, officials say.
- *Winnipeg Free Press*. (1987, October 5). Tidal wave of lawsuits from U.S. could kill industry.
- *Winnipeg Free Press*. (1987, October 6). Asbestos and your health (Part 4: Danger lurks everywhere: Most people unaware how common material is.
- *Winnipeg Free Press*. (1987, October 6). Asbestos and your health: Because law is different, Canadians seldom sue.
- *Winnipeg Free Press*. (1989, November 3). Removal of asbestos at hospital demanded.
- *Winnipeg Free Press*. (1989, March 1). Asbestos exposure remains ungauged.
- *Winnipeg Free Press*. (1991, September 18). Office tender battle goes on Appeal court reserves decision in bout over new MHRC quarters.
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- *Winnipeg Free Press*. (1995, September 30). Asbestos-Ruling B.C. judge rejects suit to cover asbestos removal.
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- *Winnipeg Free Press*. (1995, December 30). Death the key: staff.
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- *Winnipeg Free Press*. (1996, January 17). Asbestos hunt begins in schools.

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Quebec

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- *Montreal Star*. (1971, November 25). Asbestos Studied for Health Hazards.
- *Montreal Star*. (1972, February 19). Asbestos Powder Banned.
- *Montreal Star*. (1972, June 27). Black Killer Cloud Haunts World's Biggest Asbestos Town.
- *Montreal Star*. (1972, October 5). New Ties for Asbestos, Cancer.
- *Montreal Star*. (1973, January 10). Scientist says Chemical Make-up Not to Blame: Asbestos-fibre Size 'Cancer-causing.'
- *Montreal Star*. (1974, December 18). Shulman, Minister Battle Over Asbestos Report.
- *Montreal Star*. (1975, January 8). Shulman Claims (Illegible) for Asbestos Warnings.
- *Montreal Star*. (1975, February 6). Asbestos Shutdown Demanded by Lewis.
- *Montreal Star*. (1975, February 22). Asbestos Ban Plea Weighed.
- *Montreal Star*. (1975, March 7). Asbestos Labeling Studied.
- *Montreal Star*. (1975, September 24). Age of Asbestos May Be Ending.'
- *Montreal Star*. (1975, October 8). Health Concern Grows: Safer Air Standards Proposed for U.S. Asbestos Firms.
- *Montreal Gazette*. (1980, April 9). Asbestos: What is it? Is it killing us? Can we stop it?
- *Montreal Gazette*. (1980, April 25). Asbestos hazard in classrooms ignored almost a year.
- *Montreal Gazette*. (1980, April 26). School chiefs, teachers' leaders want action on asbestos threat.
- *Montreal Gazette*. (1980, November 4). Citizens fear asbestos waste.
- *Montreal Gazette*. (1981, February 27). Board plans to remove asbestos from schools.
- *Montreal Gazette*. (1982, May 27). Canada won't ban asbestos despite risks, minister says.
- *Montreal Gazette*. (1982, May 28). Scientists cool to banning asbestos.
- *Montreal Gazette*. (1986, January 24). Quebec to fight 'catastrophic' U.S. asbestos ban.
- *Montreal Gazette*. (1986, February 18). Government tests for asbestos in schools inadequate: experts.
- *Montreal Gazette*. (1986, June 25). Tough new curbs on asbestos agreed to by envoys of 150 nations.
- *Montreal Gazette*. (1986, June 30). Thorough study of asbestos in schools needed.
- *Montreal Gazette*. (1986, July 8). No limits placed on asbestos claims.
- *Montreal Gazette*. (1987, May 22). Industry calls for worldwide controls on asbestos.
- *Montreal Gazette*. (1989, July 6). U.S. rebuffs Canada and will ban asbestos.
- *Montreal Gazette*. (1989, July 7). U.S. asbestos ban: Counting the Cost. We'll take U.S. agency to court to fight asbestos ban, Savoie says.
- *Montreal Gazette*. (1989, July 7). U.S. asbestos ban: Counting the Cost. Nationalist dream fuelled asbestos investment.
- *Montreal Gazette*. (1989, July 7). U.S. asbestos ban: Counting the Cost. Stop promoting dying industry – pollution group.
- *Montreal Gazette*. (1990, January 19). Asbestos little risk at low levels: MDs. Experts doubt need for routine removal from buildings.
- *Montreal Gazette*. (1990, January 31). Asbestos firms sued: 29 states want industry to pay for substance-related damages.

- *Montreal Gazette*. (1990, December 13). Speaker promises asbestos check of MPs' offices.
- *Montreal Gazette*. (1991, September 27). Canadian officials hail U.S. asbestos study.
- *Sherbrooke Record*. (1967, June 19). Cigarette Smoker's Cancer Hazard Said 90 Times Greater for Asbestos Workers.
- *Quebec Chronicle*. (1967, June 19). Asbestos Workers Advised to Refrain From Smoking.

Saskatchewan

- *Regina Leader Post*. (1967, June 20). Smoking Cancer Risk; Asbestos Much Greater.
- *Saskatoon Star-Phoenix*. (1967, June 20). Asbestos-cancer Link Investigated.
- *Saskatoon Star-Phoenix*. (1969, November 21). Asbestos Seen Cancer Cause.

Nova Scotia

- *Halifax Chronicle-Herald*. (1980, April 30). School asbestos study will begin next week.
- *Halifax Chronicle-Herald*. (1980, May 3). Inspection for blue asbestos worthwhile.
- *Halifax Chronicle-Herald*. (1980, May 5). Asbestos problem should be considered 'seriously'.
- *Halifax Chronicle-Herald*. (1980, July 16). Schools asbestos study well under way, says Donahoe.
- *Halifax Chronicle-Herald*. (1982, June 19). Floor tiles may be source of asbestos fibres.
- *Halifax Chronicle-Herald*. (1985, July 6). Schools to be tested for asbestos.
- *Halifax Chronicle-Herald*. (1985, August 31). Education department to get asbestos report.
- *Halifax Chronicle-Herald*. (1985, September 14). Asbestos clean-up underway.
- *Halifax Chronicle-Herald*. (1985, September 18). Eight schools to get asbestos cleanup.
- *Halifax Chronicle-Herald*. (1985, November 23). Asbestos removal to begin during Christmas break.
- *Halifax Chronicle-Herald*. (1986, August 13). Asbestos use to be curtailed.
- *Halifax Chronicle-Herald*. (1986, November 19). Inept department blamed for asbestos "crisis".
- *Halifax Chronicle-Herald*. (1987, June 2). Ceiling asbestos poses "no hazard" at Halifax airport.

The following tables provide examples of newspaper articles from US newspapers and magazines available in Canada that would serve to increase the awareness about asbestos by the Canadian public in general and Canadian building owners in particular.

U.S. Newspapers

- *New York Times*. (1964, October 7). A Rare Carcinoma Believed on the Rise: Study of Asbestos Workers Shows a High Incidence.
- *New York Times*. (1966, March 2). Asbestos Dust Called a Hazard To at Least One-Fourth of U.S.

- *The Washington Post*. (1967, December 25). Rare, Fatal Cancer Is Showing Up Among Those Handling Asbestos.
- *Wall Street Journal*. (1968, November 7). Medical Researchers Study Role of Asbestos As Cause of Ailments: Men Who Work With It Have High Rate of Lung Ills; Dust Adds to Urban Air Pollution.
- *New York Times*. (1970, February 1). Long Battle Seen to End Pollution: April 22 Teach-In Must Be Backed Up, Biologist Warns.
- *The Seattle Times*. (1970, March 1). Professor at U.W. Meeting Notes Danger of Spraying Asbestos for Insulation.
- *New York Times*. (1970, May 28). City Acts to Curb Asbestos Spray: Begins Hearings on Cancer Peril in Industrial Use.
- *New York Times*. (1970, May 28). Experts Ask That National Records Be Kept on Cancer. .
- *New York Times*. (1970, June 16). City to Stop Spraying Asbestos; Material Was Linked to Cancer.
- *New York Times*. (1970, October 8). Ottinger Backed by Construction Workers Group.
- *New York Times*. (1971, December 3). Study Finds Risk in Asbestos Level: Hazard Noted in Breathing Formerly 'Safe' Amounts.
- *New York Times*. (1971, December 4). Industrial Emission Standards For 3 Air Pollutants Proposed.
- *New York Times*. (1972, February 26). City to Crack Down on Asbestos Sprays' Use.
- *New York Times*. (1972, March 15). Asbestos Jobs Tied to Cancer Outbreak.
- *New York Times*. (1972, April 29). Labor Criticizes Work Safety Act: Enforcement 'Half-Hearted' Union Official Charges. .
- *New York Times*. (1972, May 21). Manville Breathes Easier: Asbestos Dust Fear Eased. .
- *New York Times*. (1972, June 13). (Illegible) Inadequate: Cancer Authority Says Many Workers Face Death.
- *New York Times*. (1972, July 27). Asbestos work, smoking combine to cause cancer, research shows.
- *New York Times*. (1972, September 30). Shipyard Workers of 1940's Told of Cancer Peril.
- *New York Times*. (1972, October 5). Wider Link to Cancer Found in Asbestos Workers.
- *New York Times Magazine*. (1973, January 21). Asbestos, the Saver of Lives Has a Deadly Side.
- *New York Times Magazine*. (1973, January 21). Asbestos, the Saver of Lives Has a Deadly Side.
- *New York Times*. (1973, February 2). Court Bars Delay in Cleaning Up Air: Finds Ruckelshaus Erred in Giving 17 States a 2-Year Extension on Deadline.
- *New York Times Magazine*. (1973, February 25). The Hazards of Safety.
- *New York Times*. (1973, March 31). E.P.A. Orders Curbs on 3 Hazards in Air.
- *New York Times*. (1973, May 31). Mt. Sinai Is Named A Research Center For Asbestos Study.
- *New York Times*. (1973, June 16). Asbestos Found in Duluth Water: E.P.A. Links Fibers in Lake to Industrial Discharge.
- *New York Times*. (1973, June 24). Duluth Stoically Awaits Tests for Cancer Risk in Its Water.
- *New York Times*. (1973, November 25). Conferees Study Asbestos Hazard: 125 From 13 Countries Find That Lethal Mineral Is Present Everywhere.
- *New York Times*. (1973, December 11). Asbestos Cement Pipe Ban Is Urged by Science Center. .
- *The Los Angeles Times*. (1974, January 23). Asbestos in California Water: How Much, How Dangerous?

- *New York Times*. (1974, July 18). Agency Accused on Health Rules: Ex-H.E.W. Physician Says Memos on Asbestos Peril Angered Labor Aides.
- *New York Times*. (1974, July 21). What is Being Done About Jobs That Can Kill.
- *New York Times*. (1974, September 10). Yale Art Volumes Will Be Removed To a Safer Building. .
- Unknown. (1974, September 19). Cancer Found in Relatives of Asbestos Workers 30 Years After Contact.
- Unknown. (1974, September 22). The Contagion of Asbestos.
- *Wall Street Journal*. (1974, October 16). Four Wrecking Firms Accused of Violating EPA's Asbestos Rules.
- Unknown. The Hidden Plague: Even the Families of Some Workers are Endangered by Occupational Hazards.
- Unknown. (1975, March 25). Fine Fibers Called Lung Disease Risk.
- *New York Times*. (1975, May 6). 163 Who Had Jobs at Raybestos Sue: Charge Asbestos-Related Harm in Papers Asking for \$362-Million.
- Unknown. (1975, September 19). Fireproof Plaster in Buildings Called Continuing Cancer Peril.
- [Portland, OR or Seattle, WA] *Journal of Commerce*. (1971, May 19). Asbestos Spray Insulation Claimed Dangerous.
- Unknown. (1975, June 18). Test for Cancer Set in Minnesota.
- Unknown. (1975, August 8). Asbestos Called a Peril in Homes: Inhalation Threat Is Found in Patching of Walls.
- Unknown. (1975, August 27). Asbestos Warning Given for Spackle.

Appendix J

Labour Unions Identified in Royal Commission Report, Appendices A, B, D, & E

Labour Unions Identified in Royal Commission Report, Appendices A, B, D, & E

A partial list of labor unions involved in the Royal Commission proceedings in 1980-1984, and clearly prior to that date, is shown below.

- Canadian Union of Public Employees, Ontario Division (App. A, D & E)
- Communications Workers of Canada, Ontario Region (App. A, D & E)
- Energy and Chemical Workers Union (ECW), (App. A, D & E)
- International Association of Bridge, Structural and Ornamental Iron Workers, Local 721 (App. A, D & E)
- International Brotherhood of Electrical Workers, Local Union 105 (App. A)
- International Union, United Automobile, Aerospace and Agricultural Implement Workers of America, Canadian Region (App. A, D & E)
- United Electrical, Radio and Machine Workers of America, National Office (App. A, D & E)
- United Steelworkers of America, National Office and District 6 (App. A, D & E)
- Canadian Union of Operation Engineers and General Workers, Local 110, Toronto, Canada. (App. B & E)
- Ontario Public Service Employees Union (OPSEU). (App. D & E)
- Ontario Association of Heat and Frost Insulators and Asbestos Workers, Insulators Health Hazards Program
- Transportation and General Workers Union, U.K. (App. D)
- International Association of Heat and Frost Insulators and Asbestos Workers Union, Local 95. (App. D & E)
- Labour Council of Metropolitan Toronto (App. A)
- London and District Labour Council (App. A)
- Ontario Federation of Labour (App. A & D)
- Quebec Asbestos Mining Association (App. A)
- St. Thomas and District Labour Council (App. A)
- London and St. Thomas District Labour Councils, Health and Safety Committees (App. D)
- Employees (CUPE), Metropolitan District Council (App. D)
- Provincial Building and Construction Trades Council of Ontario, (App. D)
- Hamilton Labour Council, Hamilton Area Occupational Health and Safety Committee (App. D)
- Ontario Ministry of Labour (OFL), (App. B & D)
- Department of Working Environment Ministry of Labour (App. B)

- Occupational Health and Safety Branch Saskatchewan Department of Labour (App. B)
- Labour Council of Metropolitan Toronto (App. D)
- London and St. Thomas District Labour Councils, Health and Safety Committees (App. D).

Appendix K

Background Information on Building Owners' Groups

Background Information on Building Owners' Groups

BOMA International, BOMA Canada, BOMI

BOMA International, the Building Owners and Managers Association, has been well established in Canada for many years. BOMA International is headquartered in Washington, DC, USA. BOMA Canada, the Canadian arm of the organization, has provincial offices in most of the Provinces:

- BOMA Edmonton: located in Edmonton, Alberta was founded in 1967 and joined BOMA International in June 1968
- BOMA Calgary
- BOMA Toronto located in Toronto, Ontario
- BOMA Ottawa: founded in 1971
- BOMA British Columbia: located in Vancouver and founded in 1911
- BOMA Manitoba
- BOMA Quebec: founded in 1927
- BOMA Atlantic located in Halifax
- BOMA Regina is located in Regina, Saskatchewan

BOMI, the Building Owners and Managers Institute, was founded in 1974 as an educational organization serving all members of BOMA.

Members of BOMA Canada would have had access to information relating to asbestos from two sources; the local affiliates relating information about local issues and BOMA International relating information about BOMA legislative issues in the US relating to asbestos.⁵

Some, if not all, BOMA Provincial offices maintain a library of information available to its members. The BOMA Calgary library lists a copy of the following document:

- USEPA. (1985). Guidelines for Controlling Asbestos-Containing Materials in Buildings.

IFMA

The International Facility Management Association was established in 1980 and has Canadian affiliates (chapters) throughout the Canada provinces.

- IFMA British Columbia Chapter: located in Vancouver
- IFMA Calgary Chapter: located in Calgary, Alberta
- IFMA Northern Alberta Chapter located in Edmonton, Alberta and formed in 1992
- IFMA Regina located in Regina, Saskatchewan
- IFMA Manitoba located in Winnipeg, Manitoba
- IFMA Toronto located in Ancaster, Ontario and formed in 1982.
- IFMA London located in London, Ontario
- IFMA Ottawa located in Nepean, Ontario
- IFMA South Central Ontario located in Mississauga.
- IFMA Conestoga College located in Mississauga, Ontario
- IFMA Montreal located in Pointe-Claire, Quebec and formed in 1986.

As with BOMA, members of IFMA-Canada would have had access to information relating to asbestos from two sources; the local affiliates relating

⁵ Refer to the R. Morse report on Availability of Information About Asbestos to Building Owners and Managers [in the US], 1970-1995 for a detailed accounting of information potentially available to Canadian building owners.

information about local issues and IFMA relating information about US issues relating to asbestos.

Appendix L

Background Information on Provincial Regulations

Examples of the asbestos-related regulations from various provinces, along with public notice dates, are shown below:

Ontario

- Occupational Health and Safety Act
- O. Reg. 655/85, "Designated Substance – Asbestos," replaced O. Reg. 570/82 in 1985. This regulation included language addressing asbestos in buildings: "This regulation applies...to every employer, engaged in work on a building that is necessarily incidental to the repair, alteration or maintenance of machinery or equipment and to those workers of such an employer who are likely to inhale or ingest asbestos, if the employer has...put into effect and maintained measures and procedures to control the exposure of workers to asbestos and has incorporated the measures and procedures in an asbestos control program in accordance with this Regulation."
- O. Reg. 23/87 amended "Certain Regulations," including paragraphs dealing with asbestos, in 1987. This regulation was published in *The Ontario Gazette* in 1987.
- O. Reg. 529/88, "Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations," replaced O. Reg. 654/85 in 1988. This regulation was published in *The Ontario Gazette* in 1988. It was later changed to O. Reg. 838 in 1990.
- Workers' Compensation Act
- The Workers' Compensation Act, revised in 1970, classified industries covered by the Act, including "manufacturing fibre or asbestos goods."
- O. Reg. 276/92 amended the Workers' Compensation Act to include a Schedule [4] that listed asbestosis, among other diseases, as an occupational disease and identified (as a process related to the occupational disease) "Any mining, milling, manufacturing, assembling, construction, repair, alteration, maintenance or demolition process involving the generation of airborne asbestos fibres." This regulation was published in *The Ontario Gazette* in 1992. This change would have included building owners as well as engineering, abatement, and demolition contractors.

Manitoba

- Workmen's Compensation Act
- The Workmen's Compensation Act was originally enacted in 1954.
- Reg. 82/74, "A Regulation Under the Workmen's Compensation Act Relating to Miscellaneous Matters," was published in *The Manitoba Gazette* on May 11, 1974. This regulation addressed asbestos workers in buildings and other places.

Nova Scotia

- Dangerous Goods and Hazardous Wastes Management Act

- The Dangerous Goods and Hazardous Wastes Management Act was enacted in 1986.
- N.S. Reg. 238/88, "Asbestos Waste Regulations," was published in the *Royal Gazette* in 1988. This regulation designated asbestos as a "dangerous good." The regulation language provided that "Every person involved in the transportation, handling, storage or disposal of asbestos waste shall ensure that asbestos fibers do not become airborne;" and that "No person shall remove asbestos from the interior or exterior of any building or other structure or part thereof unless the removal is carried out in accordance with the requirements of the Codes of Practice respecting Managing Asbestos in Buildings and Removal of Friable Asbestos Containing Materials made pursuant to the Occupational Health and Safety Act."

Newfoundland and Labrador

- NFLD Reg. 194/91, "Asbestos Abatement Code of Practice under The Occupational Health and Safety Act," was published in *The Newfoundland Gazette* on October 4, 1991. As stated in (2) Application of this regulation, "This Code of Practice applies to: (a) every workplace covered under Occupational Health and Safety Legislation where asbestos or material containing asbestos is likely to be handled, dealt with, disturbed or removed and including every project, project owner, contractor, employer and employee engaged in or on the project; (b) the repair, alteration or maintenance of a building containing asbestos and to the owner thereof, and to every employer and employee engaged in such repair, alteration or maintenance; (c) every building in which material that contains asbestos has been used and to the owner thereof;...and (f) other operations involving a risk of airborne asbestos exposure."

Appendix M

Selected Government Documents

Government Documents

- Ontario Ministry of Labour, *Designated Substances in the Workplace: A Guide to the Asbestos Regulation for Construction Projects, Buildings and Repair* (Toronto: 1987)
- Council of Safety Associations Task Force, *Asbestos in the Workplace Guidebook #1: General Information: Health Effects and Uses and Principles of Control* (Toronto: Council of Safety Associations, undated but pre-1987)
- Council of Safety Associations Task Force, *Asbestos in the Workplace Guidebook #6: Handling Asbestos Products* (Toronto: Council of Safety Associations, undated)
- EPA, *Guidance for Controlling Asbestos-Containing Materials in Buildings* (Washington: EPA, 1985)
- Letter from G. Rhajhans, Dust Control Specialist, Occupational Health Specialist, Ontario Department of Health, To W. F. Hunter F. Hyde Ontario) limited, a Manufacturer of Asbestos- Containing Monokote MK3 (September 30, 1971)
- Letter from G. Rhajhans, Dust Control Specialist, Occupational Health Specialist, Ontario Department of Health, To W. F. Hunter F. Hyde Ontario) limited, a Manufacturer of Asbestos- Containing Monokote MK3 (September 30, 1971)
- Health and Welfare Canada/Consumer and Corporate Affairs Joint Press Release re Proposed Regulations on Asbestos) (May 28, 1975)
- OCCSB Comprehensive special Education Plan, July 2003 and Centre for Chronic Disease Prevention and Control of Cardiovascular Disease Inventory of Canadian Cardiovascular Disease Databases
- Environmental Control Committee of the Asbestosis Research Council, *Control and Safety Guide NO. 7 – The Control of Dust by Exhaust Ventilation when Working with Asbestos* (UK, 1973)
- Environmental Control Committee of the Asbestos Research Council, *Control and Safety Guide No. 5 – Asbestos – based Materials for the Building and Shipbuilding Industries and Electrical and Engineering Insulation* (UK, 1973)
- EPA, *Asbestos Contamination of the Air in Public Buildings* (EPA: Research Triangle Park, NC: 1975)
- Health & Welfare Canada Subcommittee on Environmental Health, Report of the Asbestosis Working Group (Ottawa: Environmental Health Directorate, Department of Health & Welfare Canada, 1976)
- Air Resources Branch, Ontario Ministry of the Environment, *Asbestos as a Hazardous Contaminant, Progress Report II: Asbestos Ambient Air Monitoring Survey* (Toronto: Ontario Ministry of the Environment, 1976)

- Ontario Ministry of Labour, Occupational Health and Safety Division, *Inspecting Building for Asbestos* (Toronto: Ontario Ministry of Labour, 1970)
- Debates of the British Columbia Legislative Assembly (Hansard), 1972-1981 (excerpts)
- *Asbestos in Buildings: A Study* Prepared by Donald J. Pinchin for the Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario, June 1982 (expert)
- Background Briefing Notes to the Ontario Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario (1984)
- B.C. Ministry of Labour/Occupational Environment Branch, *The Control Management of Friable Asbestos Materials: Guidelines for Identifying and Controlling the Hazards Associated with Friable Asbestos-Containing Building Materials* (1983)
- B.C. Workers Compensation Board, Safe Handling of Asbestos: A Manual of Standard Practices, 5th printing (Richmond: WCB, 1990)

Appendix N

Other Documents of Interest

Documents of Interest

- Don Stewart, *"Too Hot to Handle? The Vancouver Sun's Asbestos Coverage"* Vancouver: Author, 1986)
- Pierre M.F. Girgis, *Technical Study on the Cost Benefit of an Effective Operation and Maintenance Program Versus Removal of Asbestos-containing Materials in Different Types of Facilities* (Markham, Ontario: 1991)
- Girgis Environmental Consultants, Inc., *Asbestos Removal, Edmonton Mail Processing Plant, Edmonton, Alberta* (Markham, Ontario: Girgis Environmental Consultants Inc., 1989) (excerpt)
- Letter from D.A. Dowsett of the Acoustical Department of F. Drexel Co. to Eng & Wright, Architects, dated December 14, 1972
- Exchange of Correspondence Between L. Balmer of the Royal Inland Hospital and Dr. Glen Willson of the Industrial Hygiene Division of the B.C. Workers Compensation Board, dated April/May 1973
- Sprayed Fireproofing Specification for Kingsway Mall Project in Edmonton, Alberta, dated April 17, 1974
- British Columbia Wall and Ceiling Standards *Draft Specifications for Sprayed Cementious Fireproofing* dated June 1, 1977
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